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INDEX

USING THE IDEA SOLUTION
by David P. Miller Page 2

MEMODOS REVIEWED
by Henry H. Herrdegen Page 4

A VISIT WITH DAVID GOBEN
by David Goben Page 5

FOUR SHORT BASIC PROGRAMS
by Robert Knowles Page 10

BIG GAME PROGRAM REWRITTEN
by Mike Michels Page 11

PORT.BAS PROGRAM
by Jeff Vavasour Page 12

USING XT4 IN EUROPE
by Jan Vanden Bossche Page 14

OPEN FORUM Page 15

PROGRAM LISTINGS Page 17

CN80 PRODUCT GUIDE Page 23

PRINTER RIBBONS Page 27

TRS-80 SHOPPERS GUIDE Page 28

CLASSIFIED Page 39

EDITORIAL COMMENT

By now everybody should have heard about the US Post Office raising the price of postage again. This price increase is scheduled for 1995, but it will undoubtedly be approved and the price of all mail will increase about ten percent. We will not raise our subscription prices until we see just what the postage increase will be. It might be a good idea to renew your subscription now, or renew for two years when your next renewal date arrives. This will protect your subscription from any price increase forced upon us by the increase in postage prices.

We have had a number of users wanting to use MS-Utilities to transfer files for a TRS-DOS formatted disk to a disk with the MS-DOS format so it can be read by a IBM-PC or compatible and found that the PC computer would not read the disk. Remember if you are using a Model 4 with original drives, those drives are single-sided drives and will not write to a disk that has been formatted double-sided. It is the *drive* and not the *disk type* that determines how many sides to the disk that it can write to. You can not format a TRS-80 or MS-DOS disk double-sided and have it work, reading and writing in a single-sided drive.

Single-sided drives only have one read/write head which works only on one side of the drive. Double-sided drives have two read/write heads, one for each side of the disk, top and bottom.

The formatting of the tracks for single and double-sided disks are completely different. We know that it gets rather confusing about the difference between double-sided drives and single-side drives so we won't go into the technical aspects of how disk are formatted here. When in doubt give us a call.

One other hint while talking about drives, which we have covered at various times in the past, is that if you are installing new drives in your computers that have jumper blocks for the drive select. You

APRIL
1994

need to set the jumper blocks as follows:

For internal drives fed from the internal floppy edge card connector on the mother board or spearate floppy disk controller board if you have a non-gate Model 4:

Set the block on DS0 which TRS/LS-DOS then recognizes as drive zero.

Set the block on DS1 which TRS/LS-DOS then recognizes as drive zero.

For external drives fed from the external floppy edge card connector on the mother board or from the bottom of the floppy disk controller board if you have a non-gate Model 4:

Again set the block on DS0 which TRS/LS-DOS then recognizes as drive two.

Again set the block on DS1 which TRS/LS-DOS then recognizes as drive three.

Recently there has been discussions about placing four half height drives internally inside the computer case. The engineers tell us that this is *not* a good practice. By placing an additional power supply inside the computer to run the additional disk drives will cause additional heat. And even though the setup will work (initially) and even though the you have taken the additional drain off the original power supply, the installation of additional drives and power supply inside the case contributes excessive heat within the case. This heat can cause the shortening of the life of the mother board and the drives in the long run. The model 4 computer was engineered to use convection to remove the heat generated from the various electronic components. Adding a fan to circulate air does cool the insides of the computer, but adds to the noise of operation. All of the IBM clone PC computers use fans to keep their systems cool. But adding a circulating fan inside a Model 4 does not guarantee the proper circulation to cool all the components as needed, because the computer was not designed for this method of cooling as was your IBM and PC clones.

But why go to all this trouble, when it is easier to add an exterior drive, with its own power supply and enclosure already built. Your model 4 or model 3 computer was not designed to have four drives installed inside the case. Half height drives were readily available when these machines were engineered, so if they were designed to hold four drives they would have been designed to do so.

USING THE IDEA SOLUTION

Big Files & Dual DOSes
by David P. Miller

BIG FILES
As promised, the listings section contains a BASIC program that addresses the problem of making a backup of a file too large for a diskette. HBACKUP/BAS (see program listing number one) contains a machine language routine called to obtain a copy of the directory and determine the free space on the destination drive. The DATA statements that contain the machine language codes are checked each time the program is run, and a checksum developed to ensure accuracy. The program works by determining the size of the file and the free space on the drive to be used; reading and writing sectors until the diskette is full, and continuing with successive diskettes until the file is written.

A header file (HEADER/ASC) will be written on the first diskette that contains the original file name, Logical Record Length (LRL), and end of file offset (EOF). The actual data from the original file will be stored using the original filename, but with extensions of /F01, /F02... Thus, a file named MYFILE/DAT that takes up 400K on your hard drive would be stored on three 180K diskettes or two 360K diskettes. If on 180K diskettes, the first would contain the files HEADER/ASC and MYFILE/F01, the second MYFILE/F02, and the last MYFILE/F03. It is up to the user to correctly label these diskettes in order to restore them in the proper order.

No compression methods are used, and the program may actually waste space on your diskettes. Format several diskettes (enough to do the job) before starting.

I suggest that you use this program only for files too large to be backed up otherwise, and make copies of all other files using normal means (BACKUP/CMD). Line 250 controls the size of the files displayed for possible backup, and is set to the free space size of a 180K diskette (in bytes). If desired, this number can be changed to reflect the size of diskette you use: 357888 for 360K diskettes or 756528 for 720K diskettes. Other solutions are possible, of course: using an ARC or ZIP utility frequently provides the ability to back up files that would otherwise be too large to copy to a diskette and have proven quite reliable over many years' use, and some excellent commercial programs such as David Gobens' Fastback are designed specifically

with the special needs of hard disk users in mind.

(Note that this is NOT an endorsement - I have not tested Fastback with the IDEa Solution and cannot guarantee its' compatibility with the hardware!)

No restore program is provided, because the tools included with DOS offer faster performance. To restore a file backed up with HBACKUP/BAS, simply list the header file (HEADER/ASC), then copy the first file to your hard drive using the name listed in the header file. Finally, APPEND the remaining segments of the file to the first segment. Using the example given above, and assuming your hard drive partition is :1 and your floppy drive :2, the commands would be:

```
COPY MYFILE/F01:2 MYFILE/DAT:1
APPEND MYFILE/F02:2 MYFILE/DAT:1
APPEND MYFILE/F03:2 MYFILE/DAT:1
```

(inserting the appropriate backup diskette in drive :2 before issuing each APPEND command.) If the listing of HEADER/ASC shows that the Logical Record Length is something other than 256 bytes, a slightly different approach is necessary to ensure the file is restored as it was originally backed up. You must instead copy each backup file to your hard drive using the LRL parameter with the COPY command, then proceed with the APPEND command, and finally remove the backup files (/F01, /F02,...) after the file is restored. In this case, and assuming the LRL is 85, the commands for the above example would be:

```
COPY MYFILE/F01:2 MYFILE/DAT:1 (LRL=85)
COPY MYFILE/F02:2 MYFILE/F02:1 (LRL=85)
COPY MYFILE/F03:2 MYFILE/F03:1 (LRL=85)
APPEND MYFILE/F02:1 MYFILE/DAT:1
APPEND MYFILE/F03:1 MYFILE/DAT:1
```

and finally remove the files with the commands:

```
REMOVE MYFILE/F02:1
REMOVE MYFILE/F03:1
```

(for TRS/LS-DOS 6.x), or:

```
KILL MYFILE/F02:1
KILL MYFILE/F03:1
```

(for LDOS 5.1.x.)

A final note: the files created on diskette by HBACKUP/BAS consist of full-sectored files, meaning that the file restored in the above manner may contain 'garbage' at the end if the EOF was not on a full sector. This may prevent your using the restored file as if it were the original, but nonetheless provides a means to regain the majority of your data.

DUAL DOSES

At least one prospective IDEa Solution purchaser raised the question: "Can you install two different Disk Operating Systems (DOSes) on the IDEa Solution in a 'split' configuration?"

The answer is definitely "Yes!", as long as the two DOSes are TRS/LS-DOS 6.2 or higher, and LDOS 5.1 or higher. The IDEa drivers are written to support these two DOS versions and can be run once with each DOS to provide configuration "boot" diskettes that address separate portions of the hard disk. Not only is it possible to set up a TRS/LS-DOS 6.x+ and LDOS 5.1+ combination; you may also set up several different "boot" diskettes with either DOS, each "boot" diskette addressing a different portion of the drive. In addition, you may set up "boot" diskettes that share a partition, allowing you to communicate (share files) between different configurations of the same DOS, or between DOSes. The important thing to remember is to select the same number of total partitions for the drive each time you create a new "boot" diskette, so that each layout respects the partition size and setup of the other layouts.

For example, you may opt to partition your 42 Megabyte IDEa Solution into eight partitions of approximately 5 Megabytes each. This being the case, you could run the IDEa initialization software under TRS/LS-DOS 6.2+, selecting partitions 1, 2, & 3 to create a "boot" diskette with access to 15 Meg of space; then re-run the initialization software to create a second "boot" diskette and select partitions 3, 4, & 5 (later swapping drive assignments to make '4' a system drive and 5 & 3 following drive numbers); and finally run the initialization software under LDOS 5.1.x+ and select partitions 6, 7, and 8.

In this manner, partition #3 would be shared between the first and second layouts, and all three configurations would provide a total of approximately 15 Megabytes of storage. Specific configurations are many and varied, and must be decided upon according to the needs of the individual user. As previously explained in my column (CN-80 Volume 7 Number 1, January 1994), the size and number of partitions you select will largely depend upon a 'best-guess' estimate of your future needs, based upon the average size of your files and weighed against the inherent limitations of the TRS-80 DOSes (12,992K per partition, 252 files

per drive, 8 drives)

For advanced users, the IDEa drivers provide the flexibility to assign partitions of any size needed (up to the DOS limit), and partitions may be of different sizes. Thus, if manually setting up the drive, one could create a 'system partition' as small as necessary to hold only the TRS/LS-DOS or LDOS files and large partitions of 12,992K each for data storage immediately following, then a similar setup in succeeding partitions for another DOS or configuration. In this way, drive assignments could be used that leave drive :1 available for DiskDISK or SUBDIR files (again, no endorsement!)
-David P. Miller

MEMDOS REVIEWED

by Henry H. Herrdegen

MEMD OS/CMD was published as a "Bonus Program" for TRSDOS 1.3 on Computer News 80's Disk Series #17.

It was originally published in 80 Micro, August 1986 and written by Craig Chaiken. Richard. G. Snow enhanced it and provided it for publication to Computer News 80. He also seems to have fixed a bug, acknowledged by Craig, and asking if anyone could find it.

I have recently dug up this marvel, and am using it now routinely. If you are a bit tired of the two to four seconds the DOS needs to load the various library command overlays from disk, this utility is for you. Once loaded into memory, which takes about 16 seconds at boot up, all but 5 DOS commands are instantaneous, AUTO, DIR, FREE, PURGE are cut to about one second, and CLEAR takes about 2 instead of 4.5. It also allows you to run without a system disk in drive 0. Which, for instance, can simplify and speed up a backup from data disk to data disk.

How come? As Craig explained in his article, and you probably know, TRSDOS is only a "Kernel" in memory, and all command overlays are loaded from disk as needed, which takes time. From memory, they are available without any delay. Originally intended for a 128K Model 4 in III mode, the code includes conversion info for 128K 4P, 64K 4 and 48K III. According to Craig: "The 128K Model 4/4P versions require fewer then 200 Bytes user RAM. The 64K Model 4 and 48K Model III versions require 16K and 32K respectively" (leaving not much room for the III user). My old III has become an organ donor, so I can not check that statement.

On my 128K 4D, the utility loads from FD99 to the top (615 bytes), but protects itself only above FFA8 (quite a bit "less then 200!), leaving 38120 bytes (with 3 files) free for BASIC, instead of the normal 38202. And that's where I found the only problem: the "DO" command, which also wants to be on top. It either locks up or snaps back to the DOS prompt. Maybe, if Richard read this, he will be tempted to cure this interference (or maybe someone else will?).

If you should happen to use TRSDOS 1.4 or 1.5 with DBSIDE, many commands locate in high Memory, and so will interfere with MEMDOS. I use SuperScripsit on 1.4 DBSIDE loaded below the total MEMDOS bytes, and it works fine. But invoke <DBSIDE (FD98)> first, swap drives if you want, only then invoke <MEMDOS> (it will not handle DBSIDE!). If you want to use BASIC, set it to Mem 64900 (FD84H). That will leave you with 37571 free bytes. DBSIDE protects itself at first, but then MEMDOS resets the protection for itself, higher. I have not investigated (don't use) any other of the 1.5 goodies (has the PRINT/BAS bug been fixed yet?), leaving some fun for you.
-Henry H. Herrdegen

Submitting Articles and Programs

Contributions to CN80 are valued from anyone. We want CN80 to be as varied and as helpful as possible.

Programs and articles must be on a disk saved in ASCII and have a hard copy enclosed.

Programs submitted for publication in CN80 must be released into the Public Domain.

Shareware and PD programs for the File Cabinet Library are welcome and will be reviewed in future issues.

Mail to:
Computer News 80
PO Box 680
Casper, WY 82602

Material submitted cannot be returned.

A VISIT WITH DAVID GOBEN

by David Goben

Gadzooks! I've got more subjects to rattle on about that I think I have room for. On top of that, due to spending many sleepless nights during the last couple of months hammering out a BCX version 2, even though it will not be released for a while, my brain is so fried that I can hardly think anymore. This is the less glamorous side of programming. Even though I truly enjoy programming, if I had known years ago the frustrations I would daily face, I would never have learned programming in the first place (fortunately I didn't know). I put so much work and devotion into a product, not to mention hundreds of hours of midnight labor, I think that I why I go a bit wild when I hear of someone just giving a copy of my hard work away to someone else. I think there would be less piracy if the pirate knew how much work went into a product, and there would be less people proclaiming that all software should be free (or inexpensive). Nuff said.

BCX2 & MY FAT MOUTH

My head is spinning! My head is spinning! I think I stuck my foot in it when I mentioned the possibility of there being a BCX2 version of my powerful Model 4 spreadsheet program in the future. Now I'm scrambling to keep up! The questions most often asked are: When will a Demo version be available, and: Will BCX2 support the MTK mouse to keyboard program? Although I have other subjects to cover, I will go ahead and get the BCX2 queries out of the way before going on to subjects of perhaps more interest to others.

BCX2 DEMO AVAILABLE

Well, a tentative demonstration version has JUST been completed. I presume that there may be more changes later on if bugs are found in the demo (of course), and if there is enough demand for a particular feature that I may not have included. BCX2 is so much more powerful than the current BCX version, it is like comparing BCX to Busy-Calc (not to slight BC, which is a perfect product for the occasional home user who does not need a lot of fancy bells and whistles). The release of the Demo version is no guarantee that the Full version will be released any time soon. The hard part is going to be the manual.

If you would like to try out the BCX2 Demo, just ask CN80 for it, and remit $15 (US funds) to cover its cost (shipping & handling are included in this price). This small investment can be applied to the full purchase price when it becomes available. By the way, for those who already have BCX, if you would like to upgrade to the full version once it is released, you will be offered an inexpensive upgrade option. Also, if you purchased BCX shortly before the BCX2 release, then your upgrade will be free.

Again, I cannot guarantee the release date, as the manual will require a lot of work. As it is, I have already spent almost two solid months working on the BCX2 program itself.

The BCX2 Demo completely fills a 1-sided 40-track Double-Density disk (180K). What this means is that if you have just 1-sided disk drives, you cannot copy all the files onto a "boot disk" that contains even a minimal operating system. You will either have to run it from a separate drive, or obtain 2-sided disk drives. What I'm getting at is that if any of you still, by some miracle, have only a 1-drive Model 4, then you're out of luck.

The Demo contains the complete BCX2 program, =except= for the code which supports disk saves and printing. This is just like to BCX and Busy-Calc demo disks. Also, I have been asked to provide a listing in my column of all the new features that BCX2 has over BCX. Well, there is not enough room, as the list is several pages long. If you obtain the demo, the README file on the disk contains a complete list of differences, starting with differences from Busy-Calc, to differences from BCX.

BCX2 & MTK

In regard to BCX2 working with my MTK Mouse To Keyboard program, I have found that MTK will have to have a patch applied to it because column widths are so broad on the spreadsheet program. The advantage is, this patch will also enhance the over-all program support provided by MTK. Also, while I was at it, the patch includes a minor correction to the help display (shown when you type MTK ?). To create the patch, from the DOS ready prompt, enter: BUILD MTK/FIX, and enter the following lines:

```
. MTK/FIX upgrade 1.0.0 to 1.0.1
. Allow MTK to work with BCX2
. David Goben. Feb 1994
.
. Apply patch using:
.      PATCH MTK MTK
.
. This will report 4 patch lines
D00,DF=7A B3 CA
F00,DF=ED 52 D2
D01,05=7A BC CA
F01,05=ED 52 D2
D04,D8=31
F04,D8=30
```

```
D0A,3F=32 01 FE D8 2F 34
F0A,3F=31 01 FE D8 2F 32
.EOP
```

Once done, press the BREAK key, and then apply the patch to MTK/CMD using the command:

```
PATCH MTK MTK
```

This will upgrade MTK from version 1.0.0 to 1.0.1. By the way, the MOUSE driver is also required to use MTK.

The way that I am using MTK with BCX2 (and the demo) is as follows: first I install my MOUSE+ driver by entering MOUSE, and then install MTK using the command:

```
MTK (W=12,MB=128,RB=47)
```

This command will tell MTK that there are only 12 "columns" on the screen, the Middle Button will be programmed to act as the BREAK key, and the Right Button will act as the slash "/" key. The Left Button by default is programmed as the ENTER key. You may wish to modify the WIDTH (W) parameter if you will be using more or less spreadsheet columns.

Whew!

M4 & M4P & SOUND

A couple of people have reported a "bug" in the Model III mode of the desktop Model 4 that prevents it from making sound from the speaker when using Model III software in the III-mode that supports sound, but they produce sound on the Model 4P. Well, there is not a bug. It is all due to a change made in the Model 4P. Model III program produce sound by sending data out through the cassette port (port 255, FF hex). To hear such sound on a Model III, what most people did was to attach the black output plug into the cassette interface cable to an external mini-amplifier, such as the Archer Mini Amplifier/Speaker that Radio Shack used to sell. I still have mine. (I know, I know. Some of you have performed surgery on your computers and installed internal speakers, but most people are not so desperate to take chances on the health of their computers). You can do this exact same thing on a desktop Model 4, since it contains the cassette interface and uses port 255 to support cassette operations.

The Model 4 series of computers had port 144 (90 hex) added to provide sound support. However, in addition to this, on the Model 4P, because it did not have a cassette interface, Tandy ties the cassette port to port 144. Thus on the Model 4P when data is sent out to port 255 it is =also= sent out to port 144. I suppose if some hacker wanted to, they could run a line between bit 0 of port 255 to bit 0 of port 144 (bit 0 is used for sound support on both ports).

Speaking of the cassette interface, if the Model III mode supports 1800 baud for high speed tape support at 2Mhz clock speed, I wonder if support is possible for 3600 baud at 4MHz clock speed (or higher). At 3600 baud, one could perhaps design an inexpensive tape backup unit that would save 450 bytes per second. Slow, but you could put an entire hard disk on a single cassette tape. This would be an invaluable (and CHEAP) backup system. Any programmers out there want to attack such a project? I can presume that with interrupts turned off, you could push the baud rate much higher, closer to 6000 baud, maybe. I would most certainly purchase such a product.

WRAPPING LINES

One thing that drives me absolutely batty is obtaining text file off of a BBS or on a Public Domain or Shareware disk, and finding the text with "hard returns" at the end of each line. These files were usually created on line-oriented text editors, or the authors were doing a favor to people who might not have word processors to be able to easily print the data directly from the DOS Ready prompt. However, I like to take these files, and "fancy them up" on my laser printer, kicking them out using a nice font or two for titles, headings, and regular text. However, I run into a brick wall when I meet up with files like this. For a long time I went through a tremendous amount of labor to change the returns at the end of every line into spaces (except those that are also followed by a return).

To get around this, I wrote a program called WRAP/BAS, which is listed in Program Listing Two. This program will take a file that has each line terminated by a carriage return and convert it into file that only has carriage returns at the end of paragraphs, and retains blank lines that the author may be using for text separation. Please be aware that since WRAP/BAS will modify the text file itself, that you should only use it on backup copies of the files.

To use WRAP/BAS is easy, type it into BASIC and save it as WRAP/BAS, and then RUN it. It will ask you for the name of a file to process. Once it finds the file, it does it's thing on it. Once done, you can load the file into a word processor and add fancy changes to your heart's content.

EPSON/SEIKOSHA PRINTERS

Some time back I had presented a BASIC program that printed spreadsheet files sideways on 9-pin Epson compatible printers. I should have qualified that remark and stated that it is supported on 9-pin Epson compatible printers that also supported graphics, because I have learned that a number of people still use prehistoric dot matrix printers that do not support graphics. If any of you were involved with computers in the early eighties, you may recall the excitement in the industry when the GRAFTRAX option was added to the old MX-80 printers. Back in those days, every software firm that boasted graphical output had to remind their users that if they wanted graphics printouts, that they had to have the GRAFTRAX option added to their MX-80. Also in those days, the MX-80 was the only dot matrix printer out that was worth anything. Epson (Electric Printer's Son -- since the EP was their first attempt at printers), a division of Seikosha (and producer of fine Seiko products) basically invented dot matrix technology. The MX-80 was the first mass marketed dot matrix printer that was relatively inexpensive. Relatively, I say, since there was not yet a market, and it had a price tag that boasted at being less than $1000. In those days, =any= printer was very expensive. I had paid $799 for my non-graphical Radio Shack Line Printer II back in 1980. I had paid $1999 for my DW II Daisywheel printer. Geez, I had even paid $499 for a 1-sided 180K floppy disk drive, not to mention $785 for My 16K TRS-80 Model I. And these prices were inexpensive back then, because going any other route would cost a bundle.

Now-a-days you can buy a cheap-quality 24-pin printer with built-in high resolution graphics and scalable typefaces for under $150 at places like WalMart, KMart, and Caldors (and today I overhear people complaining that =these= prices are way too high -- I have to resist the temptation to play the part of the "old fogy" who remarks to them something like, "Sonny, back in my day we had to hand-pick corn for a month just to buy the =box= that those printers came in..." or some other tall tale, and sometimes they are not as colorfully embellished as what some may think, though I'm sure my father's tale about walking barefoot for 10 miles to get to school in knee-deep snow at 50 degrees below zero has had a bit of elaboration added to it). Of course, for good quality 24-pin printers, you are still looking at price tags in the $250 - $300 range (interestingly, these are provided with no support from the manufacturer, unlike CN80, whose excellent SL-90 24-pin printer sells for $279 will full support -- I know, I have one).

The price on producing a printer that does not support graphics, or any enhanced capabilities is today so low that no manufacturer even wants to produce them. And why, when you can spend a few dollars and get a powerful product. Even my Epson Apex-80 (also called the Epson ActionPrinter), an Epson 9-pin LX-800 compatible, is still in production, but sells for a heck of a lot less than I paid only 4 year ago. I think the last price I saw for it in Caldor's was $135, though it is even lower at some other discount stores, and this is a very good and very fast printer. What strikes me is that for just a hundred or so dollars more, you can buy a 24-pin printer that has a graphics resolution of 360 x 360 dots per inch. That's a much higher resolution that most laser/LED/DeskJet printers that support only 300 x 300 DPI.

The point of this whole digression is that I am getting letters from people who have one of those "ancient" printers that do not support graphics, and they are complaining that my graphics printer programs don't work. The best part is, in one case an individual =knew= that their printer did not support graphics, but because I had stated that it works on 9-pin Epson compatibles, he assumed that my program would magically transform his printer, and he was greatly disappointed when it did not do what he had envisioned it doing. If I could do that, I'd pretty much own the lion's share of the software market right now. Sometimes I'd like to scream. ;-)

LESCRIPT and SPOOLING

Anitek, producer of the LeScript word processor (are they still around?), is the epitome of hacking. Brilliant hacking, though. Peter Ray had went to great lengths to make his word processor run on just about any III/4 (and compatible) computer. On top of that, he crammed everything, including the printer drivers, into one huge file. It then indexes the file to locate the portions that it needs to actually be loaded in memory. He did everything he could to make LeScript run as fast as he could, but sometimes this hacking can run you into trouble. For example, printer output is sent out directly to the printer port. This is OK on the Model I and III, since not much memory is available in main memory to support effective spooling. However, on the Model 4, a lot more main memory as well as extended memory is available, so spooling becomes practical. However, LeScript running on the Model 4 still writes directly to the printer port. Because of this the Operating System's SPOOL program does not work with it, and so neither does my own SuperSPOOL program, because data is never sent out through the operating system (the technically "legal" way of doing it, for reasons of device independence). Because spoolers depend upon the use of programs employing the system service

routines to process printer output, if you bypass these supervisory calls and go directly to the port, the spoolers are rendered into non-use, and so do not seem to work.

ProSoft's now-unsupported AllWrite program had originally taken a similar tact. The early versions of the program also wrote directly to the printer port. However, before ProSoft dropped AllWrite, they had upgraded it to support system services rather than going directly to the port, because people heatedly complained that they could not reroute printer output to disk files, or to spooling.

I find it odd that Peter did not make this change, as I think he was the ultimate in hacking. He would not sooner release one version of his word processor (I can still recall when it was originally called Zorloff back in the early eighties), then he would begin on the next version. It seemed like every six months he was announcing a new version, and sometimes charged people a hefty upgrade fee. Because of this, a lot of people thought that he, like so many other software producers, was simply "milking" the public, getting people to keep upgrading to the latest and the greatest in order to keep cash rolling in. I don't know about that. Maybe it is true, but if so, I think that it is only partly so. Peter is one of these people who just cannot seem to leave a program alone. Every time he learns something new, he cannot help but upgrade everything of his in sight to support a new discovery. I guess he is part of the "wouldn't it be cool if..." crowd. He thinks something up and cannot help but think it absolutely essential to add it immediately to his pride and joys. Well, at least he didn't have Babbage Disease, which is where before you finish a product, you get an even better idea and so scrap the old idea and all its work, and start on the new idea, until another new idea comes along, ad infinitum.

I cannot claim to be entirely free of this, myself. So often, I will work to the best of my ability to push out a product, using the best technology I am capable of. However, as I do this, I gain experience, so once the product is shipped out to CN80 for publication or retail, my new experience has granted me greater insights, and suddenly I come up with an even better solution. For real, on a couple of products I had in fact hoped that someone would discover a flaw in the programs so that I could immediately upgrade the product to both fix the bug, and incorporate my new ideas. But there is a thing called "putting it to bed," where once the deadline is met, any new enhancements are null and void. This is essential if anyone ever wants to get a product out the door.

Take for example Busy-Calc, BCX, and now BCX2. When I wrote Busy-Calc in late 1989, I was pushing my technical knowledge to its absolute limit. Indeed, when CN80 first asked me to write a spreadsheet program, I shirked from the idea because the extent of such a program seemed overwhelming. To produce such a product, I would have to develop not only a powerful user interface and display system, but also a complete floating point math library, umpteen functions and all their support, as well as output technology, none of these things being simple or easy. However, after a couple of weeks of rolling it around in my head, I hit upon how I, using my present level of programming and computer knowledge, could accomplish such a feat. What resulted was the Busy-Calc spreadsheet program, a product that I am still quite proud of. At the time that I had written it, I could not have written a better program. I was absolutely maxxed out in as far as my capabilities and skills were concerned. However, after completing the program and the manual (the manual being another gigantic feat in itself), I shipped it off to CN80 and collapsed into mental vegetation for a while. However, once my energy levels got back up to nominal speed, I realized that with all these new things that I had to invent just to get the job done, that with them no longer being new ideas, but rather a portion of the foundation upon which I continually built my knowledge, I was now open to new ideas. And so, almost exactly a year after I had begun my Busy-Calc project, I had started work on BCX, being goaded by nagging obstacles that were part of such programs as VisiCalc and Multiplan, but at the time I could not figure them out. But now with the old problems out of the way, I began concentrating on the new ones, and the ones that I was before at a total loss to solve. And thus was BCX born; a product that only a year before would have been totally impossible for me to tackle. Again, with all my new and vaster knowledge under my belt derived from both the development of Busy-Calc and of many other complex projects, I put everything I had into BCX, using every last drop of personal knowledge and resources. Again, BCX was produces using the maximum extent of my capabilities. At the time, it would have been totally impossible to produce anything better.

Now comes BCX2. After having developed such complex projects as Symphony 90 and especially MagicDraw, which again had tapped my maximum capabilities and resources, I suddenly found myself to be capable of tackling spreadsheet problems and ideas that had previously been totally beyond my abilities and understanding. Like before, I have put everything I had into the BCX2 project (I must confess that I have been playing with these ideas on

and off since BCX was released, to include several trial versions with enhancements added to test them), but none-the-less I have utilized my maximum potential. What I have produced is the best that I can do. And proudly, it is also the most powerful spreadsheet that was ever placed on a Model 4.

This only makes me wonder. Having this kind of experience notched on my gun barrel, what kind of products are in store for the future?

64K AND 128K

A few people seem to be having trouble with the whole business of extended memory on the Model 4. A Model 4 is delivered with 64K of memory. This is the maximum amount of memory that the Z80 Central Processing Unit (CPU) can directly address. However, the Model 4 is designed to be able to address additional "banks" of RWM (Read/Write Memory, or RAM; Random Access Memory) using a technique called bank switching, which swaps the address lines for the bank of memory at address 8000 hex to FFFF hex for a different bank of RAM. It is actually a simple technique; it just sounds complicated.

When a person is adding a "128K Upgrade", they are actually adding only another 64K, which will cause the computer to hold a total of 128K memory. When everyone talks about a 128K upgrade, they take it for granted that this refers to how much memory their computers will have once the upgrade is installed. However, a new person to Model 4 computing can quite understandably get confused by these terms. When they think of a 128K upgrade, it can easily be assumed that you are =adding= 128K, which to them should mean that the computer will afterward contain 192K of RAM. Unfortunately, this is not so. To CN80's credit, they have eased this problem a bit my referring to their upgrades as "64K UPGRADE KITS." I hope that this helps some people understand what is going on.

I also find it fascinating that there are people who shirk at paying $12.95 for a 64K memory upgrade kit. I recall when adding just 16K would cost you $125. Be it as it may, there is always a person every month or so who goes down to the local electronics store, picks up some 4164 chips and installs them into their Model 4. They then call CN80 to ask them to bail them out and help them figure out why the chips don't work right. The first problem can usually be attributed to obtaining chips whose refresh rate in nanoseconds is much too slow. However, in virtually all cases, it is because the 64K chips sold at all electronics outlets do not have the proper refresh rate. You can obtain them with refresh ratings such as 64, 128, and 256. However, the Model 4 requires only chips with one of these rates. If a system is set up for a particular refresh rate, as the Model 4 and any other computer out there is, they will have problems with chips whose refresh rate is either too slow or too fast. Most commonly, they may at first seem to work, and when used with MemDISK or XMemDISK, their memory test may even work, but they cannot hold their information for long. And so the user begins to notice weird things after a few seconds or a few minutes of use.

If you think you can save money by going down to such a store, even Radio Shack, and picking up their 4164 chips and save some money, it will be money thrown away, because the Model 4 will not be liking them.

Another thing is the diversity of Model 4's. Some Model 4's require that a jumper be moved, and others require that a wire be added to the motherboard. It all depends on the type and revision number of the motherboard in the computer. This is important information. CN80 provides an installation sheet with their upgrade kits that provides you with all these scoops, including the disassembly and reassembly of your computer case. How many people who went and purchased their own (wrong) chips and then called CN80 expecting them to not only to provide help, but to also send the info sheets free, CN80 will only know. You get what you pay for. If you buy tires for a car, you shouldn't expect the seller to also give you a car to go along with them.

Another important factor is that on the older Desktop Model 4's (non-gate-array, white screens), is that they also require a thing called a PAL chip. Specifically, they are a special chip that just cannot be simply picked up from an electronics retailer and installed because they must first be programmed. I know of two people who thought they could save a few dollars by ordering a PAL16L8CN or PAL16L8ACN from JDR, Jameco, or Unicorn Electronics, and then cry the blues because they afterwards found out (after having first plugged them in) that they would not work. A PAL, a Programmable Array Logic chip, is a chip that, like a PROM (Programmable Read Only Memory), can be programmed to process electronic signals using a "burning" technique that forces the generically arranged innards of the chips to keep certain logic tracks shorted (connected), or blown (disconnected). So sure, you may be able to go out an by a PAL chip off the rack for $1.29, but that is before someone spends the time to unpack it, set up its programming and program it, test it, and then

repackage it. That's why CN80 charges $8. Someone doesn't sit there and do it for free, you know. If you think that $8 is robbery for a chip that sells for $1.29 wholesale, go cry to Tandy, who until they exhausted their supply, were selling these chips for $65 apiece.

CONCLUSION
Drat! I ran out of room. Hopefully next month I'll get the last of my stack of mail finished. Most of them ask the same questions, so I'll be answering them en mass here. Also, I hope to have some responses to my BCX2 demo from some of you. This is the most powerful spreadsheet ever to work on a Model 4. Hopefully, with your ideas we can tweak it to be even better. So until next month, happy computing!
-David Goben

FOUR SHORT BASIC PROGRAMS
by Robert Knowles

FORMLET/BAS (See program listing three.)
Lets try a form letter, They're a little intimidating until you get into them, then you can see that they are only variables, we all know how to use variables, its just a matter of assigning everything to variables, direct variables or input variables, some things in a form letter never change so we can put these in a direct variable, then we have the things that change with each letter these we put in an input variable so the program will stop and we can change them for each letter.

Line 30 is cls to clear the screen, line 40 will print on the screen to tell you what to do when you are done, lines 50-70 are things that never change, like the company who is sending the letter, and you must be polite so we have the title of the person we are sending the letter to and that's on an input line so you can change it if you need to, then we have input lines for the things that do change, you don't have to use three variables for the name, you can use one(that's just to help you see how it works), at line 90 we have the escape line so you can get out after each letter but after you enter G$ for the title it won't work, then we come to the date which is a direct variable, when we begin the day we enter the date and then we don't have to bother with it the rest of the day, always read the first letter to be sure its what you want, then at line 190 we see LPRINT STRING$(21,10) LPRINT STRING$ means we want a multiple of these, 21 is we want 21 of what comes next which is 10, which means line feed, we want our letter to print in the center of our paper so instead of 21 LPRINTS we use this, as you can see it saves time and space. At least that's the way it works on my DMP130A, Then we come to line 200 where we have LPRINT A$:LPRINT B$:LPRINT C$, this will put the company name and address at the top of our letter, line 210 is LPRINT TAB(53) O$, if you will look at the line for date you will see that the variable is O$ so the date will be printed at TAB(53), then at line 220 we have who we're sending the letter to, as I said we don't need all these variables they are there to make it easier to understand. Then at line 230 we have the indent that goes in our letter, then three LPRINTS on one line so that these three LPRINT will print on one line, it looks like it but that's not the way it happens, if you look closely you will see a colon between each one and that is the same as saying line feed so the paper will move up three lines, then we start the letter with DEAR and variables so the title and name of the person we are sending the letter to will appear in the letter, then we come to a line of pound signs to help us gage our letter so it will look as good as we can make it. Then we come to the letter, as you can see we don't have an awful lot to say, it's just to show you that when you write a form letter you can have direct variables and input variables and were you want something in your letter you put the variable,then we have three LPRINTS between the letter and who is sending the letter then we have three LPRINTS between the name of who is sending the letter and his title, then LPRINT STRING$(21,10) so that the printer will move down to the next form, then GOTO 30 so that you can do the next letter with out being bothered with running the program again after each letter, you just type and you don't have to think about anything but what your doing. No I'm not a vice-president, I put it there because it looks good.

TREE/BAS (See program listing number four.)
The younger users might like to see this one, if they put it in and run it people will say how clever they are. Its a very simple program, line 10 is print (1,40),"*",which means print at row 1, column 40 an asterisk. Line 20 print (2,39),string$(3,42) Which means print at row 2, column 39 a string$ of three, 42 which is ASCII for asterisk.

If you have a printer and you want it to print on the printer you might think that all you have to do is put an L and turn the PRINT into LPRINT and it will print on your printer, well, you don't know until you try it and after you try it you might look up the tab function and try it.

I saw a program that when run would count the slots in the stack, it was very good and did the job but why do programers make there programs so complicated that they makes your eyes water, the new user looks at them and can't understand them and says its just to hard and never try again. The program to count the stack is a very simple one. (its in basic) 10 GOSUB 1001,1001

BELL/BAS (See program listing five.)
Well, now that you have had a chance to look at the stack count program and find what is wrong with it, if you did, bravo. Everyone knows that if you have a GOSUB you should have RETURN but if RETURN doesn't do the job you must think of something else, so you try GOTO and that seems to work fine so I used it in the stack count program and it gives you one more then what is there and as long as you know about it then there is no problem.

The program starts at 10 which tells it to GOSUB 1001, at 1001 it says to add 1 to then print that number in the center of the screen then the program falls through to 1010 which puts one on the stack then sends the program back to 10 and round and round until you get an out of memory in 1001. Every time it hits 1001 it adds 1 to and when it hits 1010 it adds 1 to the stack, if it is going round and round and hits and puts 74 on the screen and goes to 1010 it can't put 74 on the stack because it is out of memory then logic tells as that the stack stopped at 73 .

So the stack on my computer has 73 slots in it. Most of the time you can't do this, you must be exact but sometimes you must be flexible to get the job done.

The Bell/bas program is a sound program, it makes the sound go up then back again. 10 is FOR A=1 TO 7 , we have seven tones on the model four so we want to start at the bottom and go up, 20 is SOUND A,1, tells the program to look to 10 for the count and one tells it how long, 30 is NEXT A, when you type run the program looks to ten and sees one then 20 tells it to sound one and without next its stops but with NEXT it goes back to find that the next number is two so we hear the second tone and so on for the seven tones.

Now we want to go from seven to one so we put FOR A=7 TO 1 , that makes sense, yes it does but if you tried to run it like that it wouldn't work, you must have STEP -1 which makes the program go back-wards. The rest of the program is the same. You might say that we used once to go for-wards how can we use it again in the same program?

Well, we finished with it and it is open to use again. With a little thinking you can make an alert signal out of this. The idea is there you just have to rewrite it.

FINGERS/BAS (See program listing six.)
The next program is a hello program, the hello program is used for teaching how to do a simple program, you type HI and the computer responds with HELLO, this is all well and good but I think we should have a little humor.

You are setting at your computer with this program running and you say to some poor unsuspecting person "have you met my computer?" then have them type upper case HELLO and the computer comes back with YOUR FINGERS ARE COLD, I think that might get at least a chuckle.

10 is CLS we all know CLS means clear the screen. 20 is LINE INPUT ;A$ input will leave a question mark but line input will just sit and wait for your input, ;A$ is a holding place for your answer. 30 is IF A$="HELLO" THEN 50, if we have an input line (and it must be the right input)we must have a line to tell the program what to do with the input,40 is END and we must have that end because if we don't then no matter what we put for input the minute we press <enter> the program will go on to the next line, 50 is PRINT (10,29), "YOUR FINGERS ARE COLD" which is print what ever is in quotes in the center of the screen.

I thought long and hard about sending these programs because they weren't grand enough but then I thought that every scrap that I can show you might be the scrap you need to finish that master piece you are writing.
-Robert Knowles

BIG GAME PROGRAM REWRITTEN
by Mike Michels

Hi gang. I thought you might like to have a copy of the Biggameh/BAS program that I fixed (altered) to run on LS-DOS 6.3.1. (See program listing number seven.)

I recently sent this out to a "new user" and was informed that the copy I had sent kept crashing. My first thoughts were maybe my drives were acting up again (180Ks) and had just made a bad copy.

Thinking that what I sent was just a bad copy, I pulled out the original disk that I had (CN80's M4GAM24) and tried it myself. Well sure enough, it did crash. Boy did I feel bad for sending it out without trying it first.

Anyway, I listed out the program and saw right away one of the problems was the running together of Basic's "token" words. No big deal (for me at least).

While separating the tokens, I discovered that the data statement was garbled. So, I straighten that out too.

Having never ran Biggameh/bas before, I decided to see what it did. Oh, this is nice and something my children might enjoy (especially since one of them was looking over my shoulder while I was working on it and he was getting excited about it). "Daddy, this is kinda hard to read and why does it do that", (that being listing out the user's wrong guesses down the screen). "The other games don't do this ! Is it a bug ?". No, I told him, most likely just the way it was written. Let's see if we can make it a "little nicer". So we did by adding a few print statements, some timing loops and some CLSs. "I like this one better. Daddy can I play it now ?"

I said in a minute, first I have to document what we did so anybody else who uses this can see what we did. This way, they'll know this Biggameh/bas program is a little different from the other Biggameh/bas.
-Mike Michels

(Editor's Note) We are always glad to have one of our readers and users of the File Cabinet send us any corrections to a program that they find that is not performing as it should. There are 3,645 files in the Model 4 File Cabinet Catalog not counting the new additions that have been made recently. There are 482 Game files alone. And although we did go through all 1,430 files in the Utilities section we found it impossible to check every file in the Business, Education, and Games sections. That is why it is so important for our readers to report any files that are not working, and if they have the ability to correct the errors -- so much the better. It not only helps us, but more importantly it helps your fellow user.
-Ed.

PORT.BAS PROGRAM

by Jeff Vavasour

On more than one occasion, users of my TRS-80 Model III/4 Emulator have asked me if there is a way to read files off the emulated TRS-80 disks so that they can be used in some MS-DOS application. Now, David Miller had invested quite some effort in his popular package, the MS-Utilities, and so I had made the decision not to re-invent the wheel when I was designing my Emulator.

I later realized, however, that the Emulator posed a cumbersome problem for users who wanted to move files between the emulated "virtual" disks and their PC's native MS-DOS environment: The virtual disk, perhaps residing on the PC's hard drive, would have to be copied to a floppy, brought to a TRS-80, copied onto an MS-DOS floppy using MS-Utilities, brought back to the PC, and then copied to the hard drive. This didn't seem like a very attractive prospect for people who wanted to take advantage of the interchangeability of TRS-80 AND MS-DOS computing on their PC.

As the demand for this kind of operation is obviously limited, I decided on an economical solution to this problem in the form of PORT.BAS. This is an MS-DOS BASIC program which understands the TRS-80 format encoded in the virtual disk files. It can show directories, and also read, write, or delete files on the TRS-80 virtual disk. It has been designed for the TRSDOS 6.x or LDOS-compatible format, supporting both single- and double-sided, and single- or double-density formats.

USING PORT.BAS:
The program has been specifically designed to read the *.DSK virtual disk files used by the Emulator, so if you are running the Emulator directly off a floppy, you should use the GETDISK utility described in Section 6.2 of the Emulator's manual to copy the floppy's contents to your hard drive first.

(It's a good idea to do this anyway, as you can then run the Emulator off the virtual disk on the hard drive directly, which is much faster than using the floppy.)

When you start the program, you will be prompted for the name of a virtual disk, to be chosen from those found in the default directory. Once the program has analyzed your chosen virtual disk, it displays the total amount of space available according to the TRS-80 directory, and presents you with a menu. You now have several options:

[C] will allow you to change the MS-DOS default directory.

[D] allows you to delete files from the TRS-80 disk. This is particularly useful if you need more space to copy a file onto the virtual disk.

[M] displays the MS-DOS directory for the current default path (which can be changed with [C]).

[N] allows you to switch to a new TRS-80 virtual disk. It essentially restarts the program.

[R] will prompt you for the names of files on the TRS-80 virtual disk you wish to copy to your MS-DOS directory.

[T] displays the TRS-80 virtual disk's directory, along with the size of each file and the protection status of each (e.g. invisible or password protected). DOS system files are not listed.

[W] will prompt you for the names of MS-DOS files that you wish to write to the TRS-80 virtual disk.

[X] ensures all files are closed and exits PORT.BAS. It is essential to end a PORT session with either [N] or [X] after modifying the virtual disk (either by deleting or writing files). This is because the virtual disk remains as an "open file" as long as you are running PORT.

A summary of these choices can be obtained by pressing "?" at the "Option:" prompt.

When [R]eading or [W]riting files, before you are asked for file names, you are prompted to say whether or not they are to be treated as ASCII files. The reason for this is that the end of a line in a TRS-80 text file consists of the single-byte code "CR", while the PC uses the two-byte code, "CR/LF". By replying "yes" to this question, PORT will automatically convert the end-of-line code in the destination file to the appropriate sequence.

File name prompts for the [D]elete, [R]ead, and [W]rite options may be entered in either TRS-80 or MS-DOS format. That is, you can use either "filename.ext" or "filename/ext". To make processing quicker, any time you choose to [D]elete, [R]ead, or [W]rite files, you will be prompted to enter additional file names until you reply with simply [ENTER], which will return you to the menu prompt.

When you are done with a virtual disk, be sure to enter [N] or [X] in order to ensure that the virtual disk is properly updated and that all files are closed.

SOME FURTHER NOTES ON USING PORT:

* The syntax of the commands in the PORT program is critical. A mistake may result in improper handling of the TRS-80 disk, which could damage its contents. Be sure that you type the program listing in correctly, and test it out on some "expendable" data first. Better yet, get a copy of it from Computer News on Disk.

* When specifying file names, DO NOT include an MS-DOS path name. (For example, "\PATH\FILE.TXT" is not allowed.) Instead, use [C] to change the default path.

* Though protection status is shown in the TRS-80 directory listing, PORT ignores the meaning, treating all files as unprotected. Furthermore, if you overwrite a password protected file in the TRS-80 directory, it's protection will be removed.

* Also, regardless as to whether or not you specify that a file is ASCII, PORT will add an extra EOF byte to a file when it is [R]ead from the TRS-80 disk to your MS-DOS directory. This is a limitation of the fact that PORT was written in BASIC. The EOF byte is stripped from ASCII files when using the [W]rite command. For most files, this should pose a problem.

* The [X] option exits to DOS, so make sure you save the program after typing it in.

I hope this makes the Emulator a more pleasant experience for those diehard users out there!
-Jeff Vavasour

(Editor's Note) The PORT.BAS program is a basic program which takes three and a half pages of Basic Line text, a little too long to be printed here, and we are sure that you would not want to type it in yourself. It only works in conjunction with the Model III/4 Emulator program, so it is not a program that would be of benefit to those who do not own the Eulator program.

This program is will be available on the next disk series (#25) or if you would like to have this program before May when the disk #25 would be available, mail the customary $2 for postage and handling and we will send you a disk with the program on it.

USING XT IN EUROPE

by Jan Vanden Bossche - Belgium

I have recently obtained the communications package XT4, and a problem with that has prompted me to write a very short utility. (See program listing below.)

You might not be aware of this, but the TRS-80 was sold all over the world, sometimes in 'localized' versions. The European Model III/4 were produced by Matra - France and had keyboards for the Belgian/French market : AZERTY and for the German market : QUERTZU. (I once found a Model 4 with what I think was a Spanish character generator, but the French version had the standard one.) In a Model 4 the characterset is determined by the DOS, in the Model III by the ROM.

The AZERTY and QWERZU-modes allow the use of characters from 0 to 31 in their keyboard-driver, which is modified to use it. It actually re-maps the keyboard, and uses 'dead' keys. E.g. you type the dead key ["] and then [e]; on the screen comes the combination of the letter 'e' with the two phonetic dots above it called dieresis mark. This is used in writing Dutch, French, German and a lot of other languages.

But these machines use the built-in chracter generator in a different way. the US QWERTY versions start up in the space compression-character mode, the Europeans do not, they use character set 2. You can see it by going into BASIC and typing PRINT CHR$ (21);CHR$(22) once. Any character you can generate with [CLEAR]-[key] or [CLEAR]-[SHIFT]-[key] is one used in the French or German modes of the Model III/4. You can't print the dieresis mark, or ^ or ~ this way. You can print them to screen with

PRINT CHR$ (0);CHR$(n).

Some programs (like XT4) use spacecompression characters without checking the mode the chracter-generator is in. In this case, the screen layout is garbled. I do have a US QWERTY myself, but I have SYSGENed the use of characterset 1 in DOS. Depending on the program, I have to switch to other modes.

Using BASIC, I created a simple solution, which always brings me into non-compressed mode, character set 1. (Standard US/Greek) If I know where I start, I can get to where I want to be.

Using characterset 1, I have tailored XT$ to accept and translate all characters with ASCII-codes over 127. (My screen layout is still garbled, but I can live with that.) I always put line 10 to 30 at the beginning of all my programs in BASIC. You never know where your program might end up.

Happy programming and best wishes from across the Atlantic.
-Jan Vanden Bossche

```
10 CLS : CLEAR : DEFINT A-Z
20 PRINT CHR$(244);CHAR$(245);CHR$246; : IF ROW(0) THEN PRINT CHR$(21)
30 IF (INP(255) AND 8)=0 THEN PRINT CHR$(22);
40 INPUT"Press 1 for exit, 2 for char.set 2, 3 for compressed mode";A
50 ON A GOT 80, 70, 60
60 PRINT CHR$(21); : END
70 PRINT CHR$(22); : END
80 END
```

NOTE

XT4 is a very popular communication package for use with a modem connected to your Model 4 computer. It is available from the File Cabinet Library on disk M4COM02, it is also the program that we ship with all modems purchased from Computer News 80 for the Model 4.

OPEN FORUM

Q: Got a question for you, I recently had to combine the guts of two of my Model 4s to get one working. While the computer works fine, I am having problems getting my Hi-Res board to work. It is a Radio Shack board which was originally installed on my gate-array Model 4P. There is only one way to install the board and have it fit into the computer once I re-install the cover, so I don't think the board is mounted incorrectly, unless an extension cable is normally used to install the board. I expect that either the non-gate array requires another graphics board or that a jumper needs to be relocated. Can you instruct me how to get the RS graphics board to work on the 4P.
-L. L. Minden, LA

A: The Radio Shack high resolution board is the same board for all the Model 4s, including the Model 4P. Provided it is the latest board and not a Model III board that was modified to work on the Model 4. Only the earliest Model 4s would be likely to have this board as Radio Shack at one time did put out the instructions to their service shops on how to modify the Model 3 board to work on a Model 4. That was done to use up their inventory of Model 3 high resolution boards and to take care of any upgrades the owner of a Model 3 needed when he upgraded to the Model 3 to the Model 4.

Installation for a Model 4P is:

Locate the 34 pin (male) header connector block (J7) which is the only one of its type to be found on the mother board. It is two rows of 17 straight pins sticking straight up. These pins mate with the connector (female) block on the bottom of the right resolution board.

When installing the hi-res board, be sure that the 3/16" holes along the side of the hi-res board line up with the identicle holes on the mother board. Push gently down on the hi-res board to seat it onto the mother board. Making sure that all the pins have entered the hi-res connector block.

Remove the jumper block between E4 and E5 which is located next to U102 on the gate-array boards, or next to U125 on the non-gate array boards.

Installations for the Model 4 or 4D:

For the Model 4 or Model 4D there are no jumper blocks to move, except the one on the 34 pin (male) connector to allow the graphics board to be installed.

If your board still refuses to function, we do have several working Radio Shack High Resolution Boards (26-1126) but without manuals and software. $35 + $4 S&H.

LTR: I farm with the computer. I have an 80486, 80386, 80286, XT with 8088 and a Model 4. The Model 4 has 55 meg hard drive and 2 Okidata printers, one for checks and one for reports.

The Model 4 has Radio Shack Accounts Payable, Accounts Receivable, General Ledger, Payroll and Query programs on it fully intergrated. It has kept the books for our company continuously for 10 years since 1984. It is by far the fastest, simplest and best program we have found so far.

We have tried at least 10 other accounting programs. We have over 200 vendors in accounts payable and have not ever overload the hard drive because it clears out annually at which time we get a hard copy.
-K. T. Farms, Inc. Ontario, OR

Q: I am a subscriber to Computer News 80 and I like it very much but I have a problem that I have been living with for the past five or six years. I am hoping that one od the other subscribers would write you and I may get the answer through your magazine; here is my problem.

I have a Model 4 computer, 128K memory, a double disk drive that I bought from CN80, two Radio Shack Printers. One DW2B and one DW2 Printer and neither will do underlining.

I am enclosing a self addressed stamped envelope and I am asking you to please help me and tell what I need to do to address this problem. Many thanks in advance for your help.
-J. H. B. Houston, Texas

A: According to the book "How to Use Your Radio Shack Printer" by William Barden, Jr. Your Daisy Wheel II printers do support underlining the Decimal code for start underlining is 15 and to end is 14.

You did not tell us what word processor you are using, and to do underlining would depend on how the print driver is set up for the word processor in use.

Most of the print drivers for SuperScripsit and

Scriptsit Pro use [clear] key and the [-] key code at the beginning of the words to be underlined and at the end of the words to be underlined.

If your word processing program allows you to input a table of printer user codes the codes, would then be:
27, 15 to start underlining
27, 14 to end underlining

Depending on which word processor you are using, the information should be in the word processors manual for do underling of text, and you should have a control code table in your printer's manual.

LTR: Does anyone have the instructions for installing a Megamem Board made by Anitek in a Model 4P gate array computer. I have lost the instruction sheets and would like to install it in a different 4P with a gate-array board. I have asked Anitek for the information but have received no replies.
-J. S. Des Moines IA

A: We could not find any of these instructions in the CN80 archives, if any user has them maybe they will be kind enough to send them to us and we will forward them on.

LTR: This month's (January 1994, page 3) CN80 came with by Build Program and I thank you for printing it. In it was printed how to get out of build/ksm was to press [CTRL] and [SHIFT] keys. This is not the whole story. If you press [CTRL] and [SHIFT] keys nothing will happen, you must press [CTRL] and [SHIFT] and the [@] key to get out of build/ksm.
-Robert Knowles

Q: I have acquired a Model III and I am unfamiliar with LDOS. Is it compatible with TRSDOS files?
-R. W. B. Front Royal, VA

A: LDOS is compatible with all TRSDOS 1.3 programs and disk operating systems. LDOS 5.3.1 was the last version of this DOS. The original LDOS was created to support hard drives which TRSDOS 1.3 did not support. The latest version sold by Misosys, is now out of print also as Misosys has closed its doors. If you are happy with what you are doing with TRSDOS 1.3 on your Model III there would be no reason to change.

We do have the Patch Utility Program for TRSDOS 1.3 by Henry Herrdegen, which will provide you with several bells and whistles for TRSDOS 1.3 that were not originally included in the DOS. Check the CN80 Product Guide page 2 for price and shipping.

Q: After reading Robert Gore's article "A Mini Hard Disk", in the August 1993 issue, a number of ideas came to mind.

Is it possible to transfer several programs without the TRSDOS 1.3 DOS system to a double-sided data disk and use LDOS for the Model 3 to run the programs.

I cannot imagine operating my computers without the invaluable help I have received from your magazine the past three years. My machines have never run better since having you service them with new DS drives.
-N. J. L. Sparks, NV

A: Yes, you can copy your programs from the TRSDOS 1.3 system disks to a double-sided disk using LDOS disk operating system. First you would create a blank data disk with LDOS, then use the CONVERT/cmd to copy the files from the 1.3 disk to the LDOS disk. You can then add the LDOS system files to it and have a bootable system/application disk in drive zero, or just keep the LDOS system disks in drive zero and have the application disks in drive one. But having double sided drives it would be more practical to have both your LDOS system files and your application programs on the disk in drive zero, thus opening drive one to 360K of storage. Adding a external disk drive to your Model III would not require the use of an I/O Bus interface. That is only required for use with a Model 4P. External disk drives is all you need to add for a Model III using TRSDOS 1.3 or LDOS.

REMINDER

If the last four digits on your mailing label are 94/04, then this is your last issue. Time to get your renewal in the mail.

MOVING?

Remember to send us your new address.

HBACKUP/BAS PROGRAM LISTING NUMBER ONE by David P. Miller For the Model 4.

```
10 REM Large file backup for TRS/LS-DOS 6.2+
20 REM By David P. Miller
30 DIM D$(256),D%(256):FOR X=0 TO 256:D$(X)=STRING$(18,32):NEXT X
40 M1$=STRING$(22,32)
50 FOR X=1 TO 22:READ Z:MID$(M1$,X,1)=CHR$(Z)
60 C=C+Z:NEXT X:IF C=3078 THEN C=0:GOTO 80
70 PRINT "DATA STATEMENT ERROR!":STOP
80 X=VARPTR(M1$):DEF USR0=PEEK(X+1)+PEEK(X+2)*256
90 REM *** DO NOT CHANGE ANY OF THE LINES ABOVE ***
100 CLS:INPUT "Source drive: (0-7) ",SD$
110 INPUT "Destination Drive: (0-7) ",DD$
120 IF SD$<>DD$ THEN GOTO 140
130 PRINT "SOURCE AND DESTINATION CANNOT BE THE SAME!":SYSTEM
140 LSET D$(256)=SD$
150 REM *** DO NOT CHANGE THE LINE BELOW ***
160 MID$(M1$,15,1)=CHR$(1):DR$=USR0(D$(256))
170 PRINT "Num    Filename/EXT      Size"
180 PRINT "===    ============    ========"
190 C=1:FOR X=256 TO 0 STEP -1
200 IF ASC(D$(X))=255 THEN X=1:GOTO 290
210 F$=MID$(D$(X),6,8)+"/"+MID$(D$(X),14,3)
220 R=(ASC(MID$(D$(X),17,1))+(ASC(MID$(D$(X),18,1)) *256))
230 S=R*256
240 E=ASC(MID$(D$(X),4,1)):IF E>0 THEN S=S-256+E
250 IF S<178176! THEN GOTO 290
260 IF (ASC(D$(X)) AND 24)<>16 THEN GOTO 290
270 PRINT USING "###   &   #######,";C;F$;S
280 D%(X)=C:C=C+1
290 NEXT X
300 IF C=1 THEN PRINT "No files to copy!"
310 PRINT:IF (C-1) THEN PRINT "Type a file number to copy,"
320 PRINT "Press <ENTER> to start over,"
330 PRINT "or type '0' to quit ";
340 INPUT FC$:IF LEN(FC$)=0 THEN GOTO 100
350 IF VAL(FC$)=0 THEN CLS:SYSTEM
360 IF VAL(FC$)>(C-1) THEN GOTO 310
370 FOR X=256 TO 0 STEP -1
380 IF D%(X)=VAL(FC$) THEN LSET D$(256)=D$(X):X=1
390 NEXT X
400 FL$=MID$(D$(256),6,8):GOSUB 760
410 SF$=FL$+"/"+MID$(D$(256),14,3):GOSUB 760
420 SF$=SF$+":"+SD$:EX$="/F01:":RN!=1
430 OPEN "R",1,SF$:FIELD 1,128 AS B1$,128 AS B2$
440 GOSUB 780:IF T$="Q" THEN SYSTEM
450 CLS:PRINT FL$+"/ASC:"+DD$
460 OPEN "O",2,FL$+"/ASC:"+DD$
470 PRINT #2,SF$
480 LR=ASC(MID$(D$(256),5,1)):EF=ASC(MID$(D$(256) ,4,1))
490 PRINT #2,"LRL: ";
500 IF LR=0 THEN PRINT #2,256 ELSE PRINT #2,LR
510 PRINT #2,"EOF: ";
520 IF EF=0 THEN PRINT #2,256 ELSE PRINT #2,EF
530 CLOSE 2:GOTO 550
540 GOSUB 780:IF T$="Q" THEN SYSTEM
```

Cont'd on next page.

```
550 GOSUB 680:REM Get free space on diskette
560 OPEN "R",2,FL$+EX$+DD$:FIELD 2,128 AS B3$,128 AS B4$
570 ON ERROR GOTO 820
580 PRINT:PRINT FL$+EX$+DD$+" Record#";:FOR RW=1 TO SP!
590 PRINT USING " #####";RN;:RN=RN+1:PRINT STRING$(6,24);
600 IF EOF(1) THEN PRINT:PRINT "Done":GOTO 670
610 GET 1:LSET B3$=B1$:LSET B4$=B2$:PUT 2
620 NEXT RW:CLOSE 2
630 IF MID$(EX$,4,1)="9" THEN GOTO 650
640 MID$(EX$,4,1)=CHR$(ASC(MID$(EX$,4,1))+1):GOT O 540
650 MID$(EX$,3,2)=RIGHT$(STR$(VAL(MID$(EX$,3,2))+ 1),2):GOTO 540
660 REM *** DO NOT CHANGE ANY OF THE LINES BELOW ***
670 CLOSE:SYSTEM
680 MID$(M1$,15,1)=CHR$(4):LSET D$(1)=DD$
690 DR$=USR0(D$(1)):DR$=LEFT$(D$(0),2)
700 SP!=(ASC(DR$)-1+(ASC(MID$(DR$,2,1))*256))*4
710 RETURN:REM Free sectors in SP!
720 REM Set up @DODIR call
730 DATA 213,229,245,235,35,94,35
740 DATA 86,235,126,230,15,79,6,4
750 DATA 62,34,239,241,209,225,201
760 IF RIGHT$(FL$,1)<>" " THEN RETURN
770 FL$=LEFT$(FL$,LEN(FL$)-1):GOTO 760
780 PRINT:PRINT "Insert blank formatted diskette in :";
790 PRINT DD$:INPUT "Press <ENTER> or <Q> to quit ",T$
800 IF T$="q" THEN T$="Q"
810 RETURN
820 PRINT "***ERROR***":STOP
```

WRAP/BAS PROGRAM LISTING NUMBER TWO by David Goben For the Model 4.

```
10 'WRAP/BAS -- David Goben Sept 1993
20 TROFF:CLEAR:DEFINT A-Z:CLS
30 PRINT"WRAP - 1.0 - Convert Line Editor Text to Word Processor Format"
40 PRINT"Copyright (c) 1993 by David Goben.          All rights reserved"
50 PRINT
60 LINE INPUT"Line Editor File to Process: ";F$
70 IF F$=""THEN GOTO 50
80 ON ERROR GOTO 90:OPEN"I",1,F$:CLOSE 1:GOTO 100
90 PRINT"File not found":RESUME 50
100 OPEN"R",1,F$,1:FIELD 1,1 AS D$
110 OPEN"O",2,F$
120 PRINT CHR$(14)
130 X=1:Y=LOF(1)
140 ON ERROR GOTO 270
150 IF X>Y THEN PRINT#2,CHR$(13);:PRINT:CLOSE 1,2:ON ERROR GOTO 0:END
160 GET 1,X
170 A$=CHR$(ASC(D$) AND 127)
180 IF A$="" OR A$=CHR$(0) OR A$=CHR$(26) THEN A$=CHR$(13)
190 IF A$<>CHR$(13) THEN 230
200 GET 1,X+1
210 A$=CHR$(ASC(D$) AND 127)
220 IF A$=CHR$(13) THEN A$=STRING$(2,13):X=X+1 ELSE A$=" "
```

Cont'd on next page.

```
230 PRINT#2,A$;
240 PRINT A$;
250 X=X+1
260 GOTO 150
270 A$=CHR$(13):RESUME 230
```

FORMLET/BAS PROGRAM LISTING NUMBER THREE by Robert Knowles For the Model 4.

```
10 'HOW TO DO A FORM LETTER
20 'BY ROBERT KNOWLES, FEBRUARY 1994
30 CLS
40 PRINT" WHEN DONE TYPE DONE IN CAPS"
50 A$="K INDUSTRIES"
60 B$="123 WEST 54 ST."
70 C$="ANYTOWN,ANYSTATE  12345"
80 INPUT"ENTER MR. MRS. OR MISS";G$
90 IF G$="DONE" THEN END
100 INPUT "FIRST NAME";H$
110 INPUT "MIDDLE NAME";I$
120 INPUT "LAST NAME";J$
130 INPUT "STREET";K$
140 INPUT "CITY";L$
150 INPUT "STATE";M$
160 INPUT "ZIP";N$
170 O$="PUT THE DATE HERE"
180 INPUT"PRIZE";Q$
190 LPRINT STRING$(21,10)
200 LPRINT A$:LPRINT B$:LPRINT C$
210 LPRINT TAB(53) O$
220 LPRINT H$" "I$" "J$:LPRINT K$:LPRINT L$" "M$" "N$
230 P$="        "
240 LPRINT:LPRINT:LPRINT
250 LPRINT"DEAR "G$" "J$";"
260 '#########################################################
270 LPRINT P$ "It is with great pleasure that I am informing you that you "
280 LPRINT "have won "A$" contest and your "Q$" will arive in a few "
290 LPRINT"days."
300 LPRINT:LPRINT:LPRINT
310 LPRINT TAB(31)"Robert M. Knowles"
320 LPRINT:LPRINT:LPRINT
330 LPRINT TAB(22)"VICE-PRESIDENT IN CHARGE OF CONTESTS"
340 LPRINT STRING$(21,10)
350 GOTO 30
```

TREE/BAS PROGRAM LISTING NUMBER FOUR by Robert Knowles For the Model 4.

```
10 PRINT @(1,40),"*"
20 PRINT@(2,39),STRING$(3,42)
30 PRINT@(3,38),STRING$(5,42)
40 PRINT@(4,37),STRING$(7,42)
50 PRINT@(5,36),STRING$(9,42)
60 PRINT@(6,35),STRING$(11,42)
70 PRINT@(7,34),STRING$(13,42)
```

Cont'd on next page.

```
80 PRINT@(8,33),STRING$(15,42)
90 PRINT@(9,32),STRING$(17,42)
100 PRINT@(10,31),STRING$(19,42)
110 PRINT@(11,30),STRING$(21,42)
120 PRINT@(12,29),STRING$(23,42)
130 PRINT@(13,28),STRING$(25,42)
140 PRINT@(14,27),STRING$(27,42)
150 PRINT@(15,26),STRING$(29,42)
160 PRINT@(16,38),"*":PRINT@(16,43),"*"
170 PRINT@(17,38),"*":PRINT@(17,43),"*"
180 PRINT@(18,38),"*"
190 PRINT@(18,39),"*****"
```

BELL/BAS PROGRAM LISTING NUMBER FIVE by Robert Knowles For the Model 4.

```
10 FOR A=1 TO 7
20 SOUND A,1
30 NEXT A
40 FOR A=7 TO 1 STEP -1
50 SOUND A,1
60 NEXT A
```

FINGERS/BAS PROGRAM LISTING NUMBER SIX by Robert Knowles For the Model 4.

```
10 CLS
20 LINE INPUT ;A$
30 IF A$="HELLO" GOTO 50
40 END
50 PRINT @(10,29),"YOUR FINGERS ARE COLD"
```

BIGGAME/BAS PROGRAM LISTING NUMBER SEVEN by Mike Michels For the Model 4.

```
1 REM ***** Big Game Animal Hunt Version 1.1
2 REM ***** G130224/BAS
3 REM modifications documented starting at line 2000
10 RANDOM
20 CLS:PRINT@ (10,29),"Big Game Animal Hunt Ver.1.1":FOR X=1 TO 2500:NEXT X:CLS
30 PRINT"In this game you'll be working"
40 PRINT"for your city zoo and you have orders to bring back"
50 PRINT"a live animal.  You'll have at least 20 tranquilizer"
60 PRINT"darts to bring the animal down.  If you run out of"
70 PRINT"darts...Watch out!!!"
80 PRINT:PRINT"The computer will set the hairs on your scope"
90 PRINT"then you must match these numbers (X and Y), then"
100 PRINT"add them together.  After you input the final result"
110 PRINT"your gun will fire...Good Luck!!"
120 PRINT"(X and Y will be anywhere between 1 and 10)."
130 PRINT"Press any key to begin the hunt...":PRINT
140 N$=INKEY$:IF N$="" THEN 140
150 CLS
200 M=0:R=0
```

Cont'd on next page.

```
210 REM
220 FOR I = 1 TO 5:READ A$(I):NEXT
225 REM 230 was DELETE ATAELEPHANT,TIGER,GORILLA,CHEETAH,RHINOCEROS in v.1.0
230 DATA ELEPHANT, TIGER, GORILLA, CHEETAH, RHINOCEROS
235 IF R = 1 GOTO 350
240 REM
245 IF R = 1 THEN 570
250 D = INT(20*RND(0)+10):IF D < 20 THEN 250
260 REM
270 X=INT(10*RND(0)+1)
280 Y=INT(10*RND(0)+1):YY=Y + 5
300 FOR I = 1 TO 3
310 X(I)=Y
320 Y(I)=X
330 XX=X(I) + Y(I)
340 NEXT:IF XX < 5 OR XX > 20 THEN 260
350 REM
360 AN$=A$(INT(5*RND(0)+1)):IF LEN(AN$)=L THEN RESTORE:GOTO 210
370 CLS:PRINT"Distance to animal is";YY;"yards.":IF YY > 9 THEN 390
380 PRINT"I don't need to tell you, that's pretty close."
390 PRINT:PRINT"The animal chosen for you to capture is the ";AN$
400 PRINT"Are you satisfied with this choice (Y or N)";
410 INPUT C$
420 IF LEFT$(C$,1)="N" THEN RESTORE:R=1:L=LEN(AN$):GOTO 210
421 IF LEFT$(C$,1)="n" THEN RESTORE:R=1:L=LEN(AN$):GOTO 210  'v.1.1
422 IF LEFT$(C$,1)="Y" OR LEFT$(C$,1)="y" THEN 430; ELSE CLS:GOTO 370 'v.1.1
430 PRINT:PRINT"You have";D;"tranquilizer darts to capture your"
440 PRINT"game animal."
550 PRINT"So without further ado input X and Y"
560 PRINT"then add the two together and input the center."
570 INPUT"Enter X";X1
580 IF X1<>X THEN PRINT"Your X setting is off.":FOR I=1 TO 1000:NEXT:CLS:GOTO 570
585 GOSUB 1000
590 INPUT"Now enter Y";Y1
600 IF Y1<>Y THEN PRINT"Your Y setting is off.":FOR I=1 TO 1000:NEXT:CLS:GOTO 590
610 GOSUB 1000
620 PRINT
630 PRINT"Enter the total X+Y";
640 INPUT X2
650 D=D-1:IF D<1 GOTO 930
660 IF X2<>XX THEN PRINT"You missed - Can't even add!":GOTO 620
670 IF XX>10 THEN XY=INT(5*RND(0)+1):GOTO 680
675 IF X2=XX THEN 690
680 IF M>3 THEN 890
685 IF X<>XY OR Y<>XY THEN 820
690 I=INT(3*RND(0)+1)
700 ON I GOTO 710,760,780
710 PRINT:PRINT"Good shot, but the ";AN$;" isn't down yet."
720 PRINT"You didn't hit a vital area..."
730 PRINT"You still have";D;"shots left.":FOR I=1 TO 2500:NEXT
740 IF D=5 THEN 860
750 GOTO 260
760 PRINT:PRINT"The ";AN$;" your trying to get is very angry."
770 PRINT"It's staggering but isn't down yet...":FOR I=1 TO 2500:NEXT:GOTO 740
780 PRINT:PRINT"Very good.  The ";AN$;" is down and out.  You can"
790 PRINT"Move in now and load it up, you still had";D
```

Cont'd on next page.

```
800 PRINT"Shot's left...":Q=1
810 GOTO 965
820 PRINT:PRINT"Oops-the durn ";AN$;" moved, your shot completely"
830 PRINT"missed it-sorry sherlock...You'll have to try"
840 PRINT"it again, maybe it won't move this time.":FOR I=1 TO 2500:NEXT
850 M=M+1:GOTO 740
860 PRINT:PRINT"You'd better do something fast-The animal is"
870 PRINT"charging and you are down to 5 shots...":FOR I=1 TO 2500:NEXT
880 R=1:GOTO 260
890 PRINT:PRINT"I really don't know what we're going to do about"
900 PRINT"that ";AN$;". This is ";M;" times it's moved..."
910 FOR I=1 TO 2500:NEXT
920 GOTO 880
930 PRINT:PRINT"You're out of tranquilizer darts!!!"
935 PRINT"The ";AN$;" is charging your truck!!!"
940 GOSUB 1000:GOTO 985
965 PRINT:PRINT"Do you want to run another round of"
970 PRINT"big game animal hunt";
975 INPUT N$
978 REM 980 was IF N$="Y" THEN RESTORE:R=0:GOTO 200 in v.1.0
980 IF N$="Y" OR N$="y" THEN RESTORE:R=0:GOTO 220  'v.1.1
982 IF Q=1 THEN 991
985 PRINT:PRINT"That ";AN$;" is going to have a good supper"
990 PRINT"Tonight...You!!!":GOTO 995
991 PRINT"Chicken!!!"
995 END
1000 PRINT:PRINT"Press any key..."
1010 N$=INKEY$:IF N$="" THEN 1010 ELSE CLS:R=1:RETURN
1090 REM
1095 REM
1098 REM ************************************************************************
2000 REM V.1.1  9/19/93 modifications by Mike Michels
2010 REM 1. corrected screen data run-ins
2020 REM 2. accept lower case input as well as upper case
2030 REM 3. fixed botch data statement at line 230
2040 REM 4. seperated Basic "token" words for DOS 6.3.1 - Note this
2045 REM     will not affect most other Basics. You may have to readjust the
2046 REM     screen display data to make it look right.
2047 REM
2048 REM 5. changed/added timing loops for screen display and CLS
2049 REM 6. added CLS, timing loop to lines 580 and 600
4000 REM  Note: To change the number of animals from 5 to whatever, just
4001 REM        change the number after the TO in line 220 and change the number
4002 REM        of animals in the data statement line 230 accordingly. Also
4003 REM        change the 5 in line 360 to the same value you did in line 220.
```

Computer News 80 Product Guide

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$ 5.00 PER DISK (V).

For your convenience advance orders for the Disk Series are accepted. Disks are shipped to you automatically as soon as they are ready. Write or call for free CN80 Disk Series Catalog.

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by David Goben

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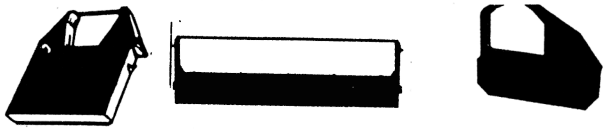

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By Jeff Vavasour

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External Clock

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- **MOVE**, to transfer files from one drive to another;
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Introducing
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Symphony 90

Opening a new era of TRS-80 Computer Generated Music

Use the full power of your Model 4

Free Music Library Catalog with each order

for Player or Composer System

Plus a Limited Time Offer of

Free Menu Disk and Music Library Disks

Symphony 90
Music Library Catalog

Complete Catalog of Symphony 90
Music on Disks Ready to use with
the Symphony 90 Play System
$3.00 - Shipping & Handling Included

The PLAYER SYSTEM will play preprogrammed music files from the Symphony 90 Music Library or Orc-90 files. The Library Menu disk allows you to select and play all the files on a disk, or play one at a time. The COMPOSER SYSTEM allows you to write and edit your own music files. Together both Player and Composer give you a complete music system that allows you to listen to prewritten music files or to compose your own music files. But, if you only want to listen to a great variety of music compositions, then purchase only the Player System. Model III versions are also available if you do not have a Model 4.

Symphony 90
Player
Music Player Only System

Symphony 90
Composer
Music Composer System

Symphony 90 Interface with built-in amplifier and volume control. Use with your stereo amplifier and speakers, Or use with your headphones or separate speakers from the built-in amplifier.

Interface sold only with the Symphony 90 Composer or Player software. The interface is not sold separately

See Product Guide for prices.

Computer News 80

REPAIR AND UPGRADE SERVICE FOR MODELS III, 4, 4P AND 4D

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RESTORATION SERVICE
If you have an original application program disk that needs to be restored, send it and $5.00 to cover the postage and handling. Please remember that it must be an original, legally owned by you, master disk. We will not restore copies of original program disks. There are many commercial games and other programs that we will not have in the archives, so it is best to call first and check.

FILE TRANSFER SERVICE
If you want to have your files transferred from one media to another. Such as having your files transferred from 5-1/4 disks to 3-1/2 we can do that for you. If you want to have files transferred from an IBM (MS-DOS) format to a TRSDOS/LS-DOS format, or from TRS-80 to IBM (MS-DOS) we can provide that service. However we do not have the equipment to handle 8" disks. Call or write for further details concerning the transfer service.

CP/M

Now only $140. Pickles & Trout CP/M-2.2m for your Radio Shack TRS-80 Model-II, -12, -16, or -6000 computer.

Still running "less-than-the-best?" We can upgrade your existing CP/M software (Lifeboat, P&T, ATON, Whatever) to the latest Pickles & Trout CP/M-2.2mH release, only $65. [Includes new manuals, full screen editor, full utilities, double sided disk support, and more.]

RAMD — Let your P&T CP/M use the 68000, memory as a super-speed disk drive, only $49.

REFORMATTER — Your TRSDOS system can read/write CP/M diskettes, only $49.

Looking for a CP/M program? WordStar, dBASE? Give us a call.

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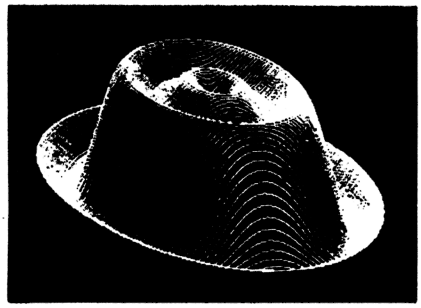
Grafyx Solution™

HIGH RESOLUTION BOARD FOR MODEL 3/4/4P/4D
Distributed by Computer News 80

Hi-Resolution Graphics for Mod 4/4D/4P/III



Superior Hardware. The Grafyx Solution provides 153,600 pixel elements which are arranged in a 640 x 240 or on the Model III a 512 x 192 matrix. Hundreds of new business, personal, engineering, and educational applications are now possible. The hi-res display can be shown on top of the standard display containing text, special characters, and block graphics. This simplifies program debugging, text labeling, and upgrading current programs to use graphics. The Grafyx Solution fits completely within any tape or disk based Model 4, 4D, 4P, or III. Installation is easy with the plug-in, clip-on Grafyx Solution board.

Superior Basic. Over 20 commands are added to the Basic language. These commands will set, clear or complement points, lines, boxes, circles, ellipses, or arcs. The hi-res screen can be printed on any of 30 popular printers or saved or loaded to disk without leaving Basic. Areas may be filled in with any of 256 patterns. Sections of the screen may be saved and then put back using any of five logical functions. Labels can be printed in any direction. The viewing area can be changed. The entire screen can be complemented or cleared. Graphics Basic provides dot densities of 640 x 240, 320 x 240, 160 x 240, and 160 x 120, all of which can be used in the same display.

Superior Software. The board comes with over 40 programs and files which make it easier to use, serve as practical applications, demonstrate its capabilities, and serve as programming examples. The software works with TRSDOS 1.3, 6.1.2, 6.2, 6.3; Dosplus 3.4, 3.5, 4; LDOS; and Newdos80. The Grafyx Solution is also supported by 30 optional applications programs: Draw, Bizgraph, xT.CAD, 3D-Plot, Slideshow, Mathplot, Surface Plot, Chess, etc.

Purchase a Grafyx Solution Hi-Res Graphics Board for $ 99.00 and receive a free copy of DRAW a powerful graphics program which allows drawing or designs to be easily created on a Model III/4/4P/4D.

PRICE REDUCTION

$ 66.00 Add (Z) S&H

Specify Model 3, Model 4p, Model 4 Gate Array, or Model 4 Non Gate Array when ordering. The boards are different for each. Please include phone number.

SAVE WITH OUR HIGH RESOLUTION COMBINATION PACKAGE NUMBER ONE

MicroLabs Grayfyx Solution Board
MicroLabs Draw Program
PostMaster Program
Hi-Res Utilities Program
PostMaster Support Utilities
Five HiRes File Cabinet Volumes

A $177.50 value if purchased separately.

All for the Super CN80 low price of

$ 133.95

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SUPER SAVER

ALREADY HAVE YOUR HIGH RESOLUTION BOARD INSTALLED - THEN

SAVE WITH OUR HIGH RESOLUTION COMBINATION PACKAGE NUMBER TWO

PostMaster Program
Hi-Res Utilities Program
PostMaster Support Utilities
Five HiRes File Cabinet Volumes

A $111.50 value if purchased separately.

All for the Super CN80 low price of

$ 75.95

Add (Z) S&H

SUPER SAVER

Programs by David Goben

Available *only* from *Computer News 80*

David's Model 4 File Utilities: for TRSDOS/LS-DOS 6.x.

Nine great file handling utilities to ensure the reliability of your files and save you *hours* of work. Of them: **DSPTXT** will allow you to view ASCII files in forward and reverse, featuring automatic word wrap, tab expansion, printed form setup, and embedded graphics. **INDEX4** will list a disk's visible files in alphabetical order, and allows you to add comments to describe them. **ERASE** totally removes all traces of a file from a disk -- ensure data security. **UNREMOVE** will recover removed, killed, and purged files. Will also list all the removed files on a disk. **SAVBAS** allows you to recover a BASIC program stored in memory after you leave BASIC (and forgot to save it). *Many other utilities.* **$9 + S&H.**

David's Model III LDOS File Utilities: for LDOS 5.x.

Has the same programs as those described above, except for **SAVBAS** (not needed). Contains 8 programs. **$9 + S&H.**

David's Model 4 System Utilities: for TRSDOS/LS-DOS 6.x.

16 powerful programs to streamline your system maintenance. Featured: **XMEMDISK** is the most powerful MemDISK utility going. Maintain more than one MemDISK! **XDRIVE** will allow you to make one disk drive act like 2. **ONEPASS** is the most powerful single-pass disk duplicator ever. Even more powerful than QFB and DISKCOPY. **VERDISK** will verify the integrity of your disks. **PRINT** allows you control any printer from the DOS command prompt. *Plus many other useful utilities.* **$16 + S&H.**

David's Model III LDOS System Utilities: for LDOS 5.x.

14 powerful programs to streamline your system maintenance. Includes all programs described above, less **XMEMDISK**. Includes **VIDX** to greatly enhance your screen and character control. **$16 + S&H.**

T62DOSXT: For TRSDOS 6.2.x.

Still use TRSDOS 6.2 but want to re-enable the dating? T62DOSXT will patch your system to take TRSDOS 6.2 through the end of 1999. Something that LSI, the DOS's creator said was impossible. ***FULL*** compatibility with the date format of LS-DOS 6.3. Includes numerous optional system enhancement patches. Also features **DATECONV** to upgrade disks to the new format. **ONEPASS** for disk duplication. Plus more! Unlike other patches, this package is *safe* with older disks that have not been converted. Use **T62DOSXT** with *complete* confidence. **$18 + S&H.**

PACK: For TRS-80 or MS-DOS.

Pack, unpack, compress, or superpack your BASIC programs for faster operation and more efficient use of disk space. The TRS version contains both Model I/III and 4 versions. MS-DOS version requires DOS version 2 or higher. Please specify computer system when ordering. **$17.95 + S&H.**

DEA: *The Disk Editor/Assembler.*

The *most powerful* integrated editor/assembler ever written. Contains both Model I/III and 4 versions. Has more enhanced features than any other. Conditional assembly, long label names, and abundant powerful math functions that are lacking in other packages. Reference addresses in, or include code from other disk files while assembling programs. These are only a small part of its many powerful features. The **DEA** package also includes a disassembler, cross reference utilities, and plentiful programming examples. **DEA** was used to write ***EVERY*** program listed in *Computer News 80* by David Goben, including **BCX, MagicDraw, Symphony 90, Diskopt, SCRIPT,** and *all* the others!

DEA: *Making Assembly Language Accessible.* **$49.95 + S&H.**

High Resolution Programs by David Goben

Available *only* from *Computer News 80*

MagicDraw: *Making screen design easy.* For Model 4/4p/4d with a hi-res board and a serial mouse with mouse driver software.

No high resolution Computer-Aided Drawing program has ever been like it. Nothing comes close to the speed, ease of use, and the power offered by **MagicDraw. *NONE!*** If you thought drawing on the hi-res screen was too cumbersome or too difficult and that you would have to leave that kind of work to others with more experience, then *think again.* **MagicDraw** is as close to buying hi-res experience as you can get.

MagicDraw offers you *dozens* of features more than its nearest competitor. It also offers you a menu selection system that was said to be totally out of reach of a TRS-80. *Wrong!* Choosing the right tool for the job has never been so easy. No more going to help screens or digging through manuals to remember a tool's selection command; with **MagicDraw** you can do so right from an easy-to-use menu.

MagicDraw: *Realizing dreams.* **$65 + S&H.**

Hi-Res Utilities Package: for Model 4/4p/4d with a hi-res board.

Take control of your hi-res artwork with this group of 10 utilities. These are the fastest hi-res utilities ever written. **HRLOAD** will load a high resolution screen file in a fraction of the time of its nearest competitor. It will load the normal **HR** files, the "crunched" **CHR** files, and super crunched **SHR** files. **HRSAVE** allows you to save hi-res screen in **HR, CHR,** and **SHR** format. **HRFXPRT** allows you to dump the hi-res screen to an Epson-compatible printer with an *incredible* variety of resolutions. **HRIBMPRT** dumps to an IBM ProPrinter-compatible printer. **HRLSRPRT** dumps to a LaserJet+ compatible printer or DeskJet printer. Seven sample files included. Other utilities allow you to clear, flip, view and shrink the screen. Take the difficulty out of processing your hi-res screens. **$15 + S&H.**

Postmaster Support Utilities: For Model 4/4p/4d with a hi-res board and with *POSTMASTER*.

Enhance your work with David P. Miller's fantastic ***POSTMASTER*** program with this set of utilities. **MAKEICN** allows you to *capture* a portion of the screen and convert it into a ***POSTMASTER*** icon. 3 capture box sizes allows you to capture larger portions of the screen and shrink them down to icon size, if you wish to. **ADDICN** allows you to add a captured icon to a library file, which ***POSTMASTER*** can use to choose from several icons. **DSPICN** allows you to view the icons you captured. **DSPLIB** displays your ***POSTMASTER*** icon libraries. **DECDFON** and **DECDBOR** allows you to *decode* ***POSTMASTER*** font and border files so that you can edit and customize them using any text editor or word processor that can process ASCII files, such as **SCRIPT** or **EDIT-4** (both available from CN80). **ENCDFON** and **ENCDBOR** allows you to *encode* ASCII files of your own creation, or *back* into font and border files to make them usable by ***POSTMASTER***. **ADDFON** and **ADDBOR** allow you to combine font and border files into libraries for use by ***POSTMASTER***. Other utilities included, along with sample files. **$39 + S&H.**

POSTMASTER 24: for Model 4/4p/4d with a hi-res board and with *POSTMASTER*.

This filtering program allows you to print your ***POSTMASTER*** printouts on a 24-pin Epson-compatible printer (such as CN80's Seikosha SL-90) with super sharp ***laser quality***. Works transparently to the rest of the system, loading right along with ***POSTMASTER***, and even removing itself when you are done with ***PM***. This is a utility that has to been seen to be believed! **$15+ S&H.**

FAST System Utilities

By **David Goben**, & *only* from *Computer News 80*

Fbackup: The ***fastest*** file-by-file backup utility ever written for the Model III or Model 4/4p/4d. Designed for LDOS 5.3, TRSDOS 6.2, or LS-DOS 6.3 it's a whopping **8 TIMES FASTER** than the BACKUP/CMD program supplied with these Disk Operating Systems. Plus it has many new features: *alphabetized backups, single drive file-by-file backups,* and *more.* It will even tell you how many disks you will need. This program has to be seen to be believed. Specify Model III LDOS 5.3 or Model 4 TRSDOS 6.2/LS-DOS 6.3 on order. $15 + S&H.

Fastback: The ***fastest*** hard disk backup utility ever written for the Model III or Model 4/4p/4d. No other hard disk backup or archiving utility is faster. ***NONE!*** Don't be fool by another's claims. Selectively backup or restore files, alphabetize, even see how many disks a backup will require. As easy as **FBACKUP**, but made for those large files that normal backup disks would not be able to hold. Designed for LDOS 5.3, TRSDOS 6.2, and LS-DOS 6.3. Specify Model III or Model 4 on order. $29.95 + S&H.

Fformat: This is the ***fastest*** disk formatting program ever written. Formats a 180K disk in 18 seconds! Works like FORMAT, but with greater versatility and speed. It can even apply high level formats and verify hard disks in one step – no more fumbling with more than one utility. A PURGE parameter allows you to reformat disks in a flash. Format 80-cylinder 2-sided disk with ease with the BIG parameter. Designed exclusively for LDOS 5.3, TRSDOS 6.2, and LS-DOS 6.3. Specify Model III or Model 4 on order. $15 + S&H.

Word Processing

by **David Goben**, & *only* from *Computer News 80*

Script: Word processor for the Model III and 4/4p/4d. ***Not*** a patch program. This is a *complete* word processor with all the features made famous by SCRIPSIT, *plus* dozens of new amenities. Powerful editing, formatting, and printing features you would expect only from packages costing much, much more. A poor person's word processor that produces professional results. Specify computer and DOS when ordering. $37.95 + S&H.

Script Spelling Verifier: For Model III and 4/4p/4d. A *powerful* spelling checker/corrector for **SCRIPT**, Disk SCRIPSIT, ALLWRITE, ASCII, TED, and other ASCII format files. Features over 75,000 words. Add up to 17,000 more words to an additional custom dictionary. Specify computer and DOS when ordering. $37.95 + S&H.

SuperScripsit Spelling Checker: For Model III and Model 4/4p/4d. Add spell checking / proofreading capabilities to SuperSCRIPSIT. Fully integrates into the word processor. *Easy* to install. Specify computer when ordering. $37.95 + S&H.

Model 4 Spreadsheets

Written by **David Goben**

Available *only* from *Computer News 80*

BCX: *The Business Calculator for Extended Memory Model 4's.*

The spreadsheet for the 90's. For Model 4 128K+. Called by its users the *friendliest* and *fastest* spreadsheet ever written for the Model 4. **No** Model 4 spreadsheet calculates faster than **BCX.** It is so fast that users have become used to keeping the automatic update feature on at all times; something you would *never* want to do with VisiCalc or Multiplan. **BCX** can calculate sales projections, income taxes, personal budgets, cost estimates, engineering changes, balance your checkbook, plus ***thousands*** of other applications. Whatever you need tabulated or computed, **BCX** can do! Play "what if" with your spreadsheets to figure your best strategies; **BCX** will remember your calculations so that when you make changes that will affect other cells, the entire spreadsheet can be *quickly* and *automatically* updated to reflect those changes, no matter how many or how drastic.

Among its numerous features are:

- **Support of up to *1 megabyte* of memory**
- **A huge 64 x 256 cell matrix (16,384) to accommodate any needs**
- **Powerful, complete set of trigonometry functions for engineers**
- **Powerful automatic table look-ups**
- **Range math that transcend simple column or row limits**
- **Read and use VisiCalc sheets with little or no change**
- **Read and use Busy-Calc sheets without changes**
- **On-line, detailed quick reference windows to jog your memory**
- **Pop-up command windows in *plain* English; no trick keywords**
- **Fast 3st screen scrolling of any spreadsheet**
- **Powerful printer options to set up any printer**
- **Huge hand-holding hands-on tutorial to help you master BCX**
- **Many powerful replication and data manipulation features**
- **A handy quick reference and a complete reference manual**

and *many more* capabilities. Has all the features users wished VisiCalc and Multiplan had. With all this power, why settle for anything less?

BCX: *The way spreadsheets should be.* $109 + S&H

Demo disk available for $15. Good toward purchase of full program.

Busy-Calc: *The Family & Small Business Spreadsheet.*

For Model 4 64K+. An economical, yet powerful and *extremely fast* spreadsheet for those who do not need huge layouts. A comfortable 64 x 64 cell matrix with powerful function, math, and reference support. Can support up to 4 banks of extended memory if you have it, though not necessary. Has most of the features of **BCX**, though simpler in structure and thus easier to use.

Busy-Calc comes complete with a reference manual featuring an extensive hand-holding, hands-on tutorial. A quick reference manual is included when you just need a refresher.

Busy-Calc: *Making spreadsheets easy.* $79.95 + S&H

Demo disk available for $10. Good toward purchase of full program.

Still More Programs by David Goben

Available only from *Computer News 80*

Model 4 Small C: **For Model 4.** Program in the language of the 90's without having to memorize huge volumes of complicated manuals. Small C is a large, almost complete subset of the C programming Laguage, and ***much*** more powerful than any other Small C package previously released for CP/M or MS-DOS. C is quickly becoming the programming language of choice by beginner and vetran programmers alike. See what it's all about without it costing you and arm and a leg. The package comes complete with the Small C compiler, program optimizer, macro assembler, and linking loader, plus other programs. What's more, the ***complete*** source code for all these files (except for MAKE/CMD) is included in this package, including the ***libraries***. More than that, ***all*** these files are written in Small C! So see by real-world example practical Small C programming! Complete with 225 page reference. **$45 + S&H**

Disk Optimization Package: **For Model 4.** Quickly defragment the files on your disks or hard disks, and optimizes their storage space. Super fast operations for quick results. During normal everyday operations, you delete, create, and expand or compress files. This causes files to be broken up into several different locations on a disk. This results in slower access to your files. The included ***DIRCHECK*** program will test your drive for errors, and fix most that you may have thought were fatal. The included ***TESTFRAG*** tests a drive to see if files exist that are fragmented. ***DISKOPT*** will defragment your files, and optionally compress the disk space, to prevent easy fragmentation of files yet to be added to the drive. Full and complete support for Model 4 SubDirectories (below) included! Uses extended memory if available for even faster operation. An essential utility especially for hard disk owners. **$29.95 + S&H.**

SubDirectory Utilities: **For Model 4.** Totally eliminate the 256-file limit of a disk drive with this set of utilities. Create *additional* directories that are subordinate to a disk's normal directory, or create whole branched systems, placing only related files in each SubDirectory. This set of utilities ***DO NOT*** create large, cumbersome files on your disks. Each SubDirectory takes up only a ***very small*** amount of disk space. These SubDirectories instead share the main directory allocation map, making large support files totally unnecessary. Even create SubDirectory trees on a floppy disk! Especially handy for hard disk users who are too often plagued by running out of file "slots" in a drive ***long*** before they run out of drive space. An essential utility for those who must keep huge repositories of files, or those who would prefer to keep related programs/files in separate niches. The SubDirectory Utilities is your answer. **$19.95 + S&H**

SuperSPOOL: **For Model 4.** Increase your productivity by decreasing the time you spend waiting for your printer to finish. Allows printing in the "background" while you go on with your other computing tasks. Unlike the Model 4 SPOOL utility, **SuperSPOOL** will take advantage of all your extended memory, even if you have non-standard add-ons that have patched the DOS to support 32K banked blocks. Can use up to 1 Megabyte if you have it. On a standard 128K Model 4, this gives you a 64K printer buffer. Also unlike the DOS's SPOOL utility, **SuperSPOOL** will not lock up your computer and lose its data if the PAUSE feature is on. Even further, **SuperSPOOL** can load into *low memory*, so that those programs that cannot run with high memory routines present will operate. Using **SuperSPOOL** is like buying an expensive printer buffer device, but does not take up valuable desktop space, and costs a whole lot less. Set your printer free with **SuperSPOOL**. **$15 + S&H**

TRANSFER FILES BETWEEN Model 4/4P/4D and MS/PC

MS UTILITIES BY DAVID P. MILLER

Transfer files quickly and easily between your Model 4/4P/4D and IBM-PC Clones.

Transfer files from MS-DOS formatted disks to TRS/LSDOS formatted disks, or from TRS/LSDOS to MS-DOS formats on your Model 4 or 4P/4D.

Read MS-DOS formatted disk directories or format MS-DOS disks with your Model 4/4P/4D. Add linefeeds or strip linefeeds as needed.

$30.00 Plus S&H

System Requirements: MS-Utilities only operates on the Tandy Radio Shack Model 4/4P/4D Computers using TRSDOS 6.2.x or LS-DOS 6.3.x operating system. It will read and transfer files stored on a disk formatted with LDOS 5.x. and TRS/LSDOS 6.3.x.

DAVE'S MOUSE MENU

By David P. Miller

Build a up to twenty six DOS command menu with the ability to repeat the DOS command by pressing a keyboard letter, pressing the arrow keys to "point and shoot" or use your mouse for "point and shoot" selection.

No longer do you have to memorize DOS commands and parameters that you use all the time. Simply type them in once and then select them from the menu.

Fully compatible with the use of a mouse, keyboard or arrow keys.

$ 15.00 Plus S&H

David P. Miller is the author of PostMaster

Refer to March 1993 CN80 (Vol. 6 No. 3) for more information about Dave's Mouse Menu.

HOWE SOFTWARE FOR MODEL I, III AND MODEL 4/4D/4P

Published and Distributed by Computer News 80

TYPITALL Word Processor $ 49.95

Word processor upwardly compatible with SCRIPSIT -- it reads your old SCRIPSIT files and uses the same formatting and cursor movement commands. Send any control/graphics character to the printer. Print formatted text on the screen, or send it to a disk file for later printing. Merge data from a file during printing. Assign any sequence of keystrokes to a single control key. Call up to 16 help screens at any time. Move cursor forward or backward by character, word, line, paragraph or page. Complete with easy to read manual.

TYPITALL Word Processor with Spelling Checker $ 79.95

Optional spelling checker has 29,500 word dictionary -- verify a 3.500 word document in less than two minutes.

SYSTEM DIAGNOSTIC $ 69.95

Complete tests for every component of your TRS-80 Model 1, 3, or 4 (separate versions for each model). **ROM:**checksum test. **RAM:**three tests. **Video Display:** character, video RAM, signal. **Keyboard:** every key contact tested. **Line printer:** character tests. **Disk Drives:** disk controller, drive select, track seek, read sectors, formatting, read/write/verify data with or without erasing, disk drive timer, disk head cleaner. Single/double density, single sided or double sided drives from 1 to 99 tracks. **RS-232-C Interface:** connector fault, data transmission, framing, data loop, baud rate generator. - Specify version when ordering.

SMART TERMINAL $ 19.95

The intelligent telecommunications program for TRS-80 Model 1, 3, 4 or 2/12 CP/M. Memory buffer for sending and receiving file. Automatic transmission and reception of data. Character translations, true **BREAK** key, and help screens.

HOWE SOFTWARE FOR TRS-80 AND MS-DOS SYSTEMS

SMALL BUSINESS ACCOUNTING WITH PAYROLL $ 99.95

Based on the Dome Bookkeeping Record #612, this program handles bookkeeping and payroll for a small business. Bookkeeper provides single entry ledgers for income and expenses, computes monthly and yearly summaries. Payroll handles up to 99 employees, with automatic deductions of F.I.C.A. and Federal income tax. State tax and three optional deductions also included. Prints payroll and expense checks, Form 941 reports and W-2 Forms.

MAILING LIST $ 79.95

Create and maintain mailing lists of up to 32,767 names and addresses. Up to five-line entries, including title, first and last names, optional second line, address, city, state, zip code, optional fifth line and telephone number. Sort or search for names by any field. Prints labels in 1, 2, 3, or 4 adjustable columns or on envelopes. Print form letters with any substitutions.

HOME BUDGET and CHECKBOOK ANALYST $ 49.95

A complete checkbook program combined with budget comparisons, income and expense analysis, and projections. Computes current checking balance. Also handles non-check expenses, bank debits, and income. Monthly and year-to-date summaries, yearly projections based on data up to a known month.

SMALL BUSINESS MANAGEMENT SYSTEM $ 149.95

A complete **point-of-sale** program for a small business. **Order desk** handles order entry, invoicing. Includes 1,999 8 character part numbers. **Bookkeeper** maintains general ledger. **Inventory** produces sales reports. **Installation** sets program to your business.

ADD SHIPPING AND HANDLING TO ABOVE PRICES

IDIM BULLETIN BOARD HOST SYSTEM
by Leonard Lorden

IDIM (I DID IT MY WAY) Bulletin Board Host System is a completely new software system written for the Model 4 computer. It comes with a 22 page manual with full instructions and three disks of programs for setting up your own bulletin board.

$ 60 plus Shipping and Handling.

VH/LIB By Richard VanHouten
LIBRARY OF SMALL C FUNCTIONS

Features Wildcard directory Searching, low and high resolution graphics routines (with emphasis on the high resolution routines) and mouse interface routines. It is a must for anyone programming in Small C on the Model 4.

$19.95 plus Shipping and Handling

ANSITERM 4

by Richard VanHouten

TRS-80 Model 4 High Resolution Communications Program.

Supports ANSI (American National Standards Institute) and AVATAR control codes. IBM graphics and file transfer by X-modem or Y-modem.

System requires Model 4 with Modem and High Resolution Board.

Program complete with printed manual.

$ 30.00 (Y) S&H Order from CN80

2400 Baud External Modem

from Computer News 80

$ 78

Plus $4 S &H

2400 baud transmission speed
Hayes compatible
Compatible with Model 3/4/4D/4P
Compatible with IBM PC/XT/AT
Auto dial/answer
Eight status indicator lights
Built-in speaker with volume control
Second jack for local phone
Call progress and error detection
Ten year manufacturer's warranty
Manufactured in the USA

Complete with all cables and

TRS-80 Communication Software

I/O-BUS LD INTERFACE

for EXTERNAL FLOPPY DISK DRIVES

Add external floppy disk drives to your Model 4P - no internal wiring - plug the interface into the external 50 pin I/O connector on your 4P and plug your external disk drives into it.

Add additional floppy disk drives to your Model 4 or 4D - again just plug the interface into the 50 pin I/O bus connector and add floppy disk drive 4 & 5.

Software for TRSDOS 6.2.x and LS-DOS 6.3.x and cable included.

Controls Double-Sided 5.25 360K, 3.5 720K or Single-Sided 180K drives.

$ 180 + $4 S&H

==========

Software for LDOS 5.3.x $ 29.94 + S&H additional. For use with the Model 4 in the III mode.

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DESCRIPTION	PRICE
FLAT RIBBON CABLE CONNECTORS	
50 Pin Male Edge Card Mating Connector	4.95
50 Pin 25x2 Edge Card/Female	1.75
50 Pin 25X2 Header Female/Socket	1.25
50 Pin 25x2 Header Male/Plug w/mounting	8.50
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34 Pin 17x2 Header Female/Socket	1.95
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25 Pin DB25 (RS232) Female/Socket	3.00
PC BOARD MOUNT	
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CONNECTOR S&H
Add $ 2.00 Shipping and Handling if ordered alone.
Shipping and Handling included if ordered with other items.

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DESCRIPTION	PRICE
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34 Pin 17x2 PCB Socket - 3/16" High	5.50
34 Pin 17x2 PCB Socket - 5/16" High	5.50
34 Pin 17x2 PCB Socket - 5/8" High	5.50

EXTENSION S&H
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FLAT RIBBON CABLE	
25 Conductor	.38 per ft.
34 Conductor	.51 per ft.
50 Conductor	.75 per ft.

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CUSTOM CABLES BUILT UPON REQUEST
Call for price quotes.

ACCURATE SIMULATION OF A VIDEO POKER MACHINE

by J. F. R "Frank" Slinkman

Play real poker on your computer with remarkable screen renditions of the playing cards. Optimum video poker strategy can be used on VIDPOKR4 or to play the real thing in Atlantic City or Nevada.

Any Poker fan will really enjoy playing against the computer, or practice the winning strategy that is included with this game package.

Model 4 with 128K and High Resolution Board Required

$19.95 (Y) S&H

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Want to see a real rendition of a working slot machine on your Model 4 computer screen? Then SLOT4 is the one that will do it. True revolving dials for payoff, moving handle, with coin dropping sound.

Amuse yourself and your kids for hours on end. Entertain your guests at your next party with your computer by letting them play SLOT4.

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by J. F. R. "Frank" Slinkman

Send GIF (Graphics Interface Format) high resolution graphics to and receive high resolution graphics from computers of different types with your Model 4 and GIF4MOD4 program.

A high resolution board is highly recommended, but not required. If you have a high resolution graphics board GIFMOD$ will decode any GIF image up to 640 pixels x 480 pixels x 256 colors and put the image on your screen. If you do not have a hi-res board installed the program will convert the GIF format to a /HR format. Then with a High Resolution utilities packager available fro CN80 you can send the /HR picture to your printer.

This package also allows you to send GIF files.

#37.95 + (Z) S&H

MINE FIELD

EXCITING AND NEW GAME FOR THE TRS-80 MODEL 4.

by Richard VanHouten

Cross the mine field and flag all the mines in advance of your troops without going boom yourself.

Five degrees of difficulty, the more mines you flag the higher your score.

Fully serial mouse supported, but a mouse is not required.

$ 12 plus S&H

ARRANGER II

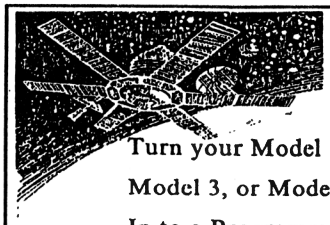
100% Machine Language Disk Index Program for the TRS-80 Model I, III, 4/4D/4P
Automatically recognizes all major TRS-80 disk operating system formats.

The ARRANGER II written by Dan Foy almost ten years ago, is a master index system that automatically records the names of your programs, what disks those programs are on and the type of disk operating system the disk was formatted under.

Program Capacity	11,000 programs optimum, 8,000 typical, 255 filenames per disk, 255 disks per library data file.
Disk Drive Compatibility	Reads 5-1/4" or 3-1/2" single-sided or double-sided; 35, 40, 80 track, and is auto self-configuration.
Functions	Add Delete Scan View Find (Search) Print Rename Change Update Toggle Locate Manual Backup Exit
Printouts	Prints out three column 8-1/2 x 11 pages with your programs listed in alphabetical order or by extensions. Prints labels with Disk:name, DOS type, and Type of disk, (system or data.)
System Requirements	Model I/III/4/4P/4D with one or more drives and 48K or more.

The greatest aid to keeping track of your disk library ever created for the TRS-80 computers. Your programs are printed in easy to read vertical alphabetized columns, unlike the horizontally alphabetized rows of the CAT program. You keep all your library on one disk in one library regardless of their DOS format type.

$39.95 Add (Z) S&H



Turn your Model 1,
Model 3, or Model 4/4P/4D
In to a Programmable
Calculator with

ASTROCAL

by VERNON B. HESTER

Designed for the student, or professional. Engineers, lab technicians, accountants, real estate brokers, designers, anyone who does repetitive or complex mathematical calculations.

10,000 Program Storage Location, 84 Labels, 100 Addressable Memory Registers, True Algebraic Entry.

This unique product intergrates mathematical programming functions in to a single convenient application. Develop scientific, financial and statistical programs with ease.

$29.95 Add (Z) S&H

MOUSEDOS

by Leonard Lorden

Load MOUSEDOS (Mouse Plus by David Goben is required) and select an icon from the screen display. Disk Drive Icon, displays a new menu and mini-keyboard. Write your command line. Utility Icon, displays several DOS commands and utility icons, click the mouse on the desired command icon or click the Exit icon to return to the main menu.

Included are icons for AUTO, BACKUP, BOOT, CONV, COPY, FILTER, FORMAT, FORMS, LINK, LIST, REMOVE, RENAME, RESET, ROUTE, SET, SETKI, SPOOL, SYSTEM, VERIFY.

Fancy in appearance, easy to understand and use. A must for mouse users. $ 25 plus S&H

DOS (Disk Operating Systems)

MODEL 3 (or Model 4 in the 3 mode)

TRSDOS 1.3 disk only no manual $ 7.00 (X)

MODEL 4 or 4D or 4P

Operating System and Manual.

TRSDOS 6.2.1 $ 45.00 (Z)
New original TRSDOS manuals and system disks

Model 4 Owners Manual $ 20.00 (Z)
(Used. No operating system disks)

Add Shipping and Handling

SEIKOSHA SP-2400
9 Pin Printer

80 Column Printer
300 Characters Per Second
IBM and Epson Compatible
Standard Parallel Interface
Built-In Push Tractor & Friction Feed
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Paper Parking
Graphics
Two year Manufacturer's Warranty

$ 179

Add $ 6.00 S&H, Shipped by UPS only.

Fully supported by CN80 and completely compatible with PostMaster, Rembrandt, Long and Loud and all the programs, published by CN80. Will work with any Model III/4,4P or 4D computer.

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IBM and Epson Compatible
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Easy Front Panel Controls
Paper Parking
Graphics 360 Resolution
Two year Manufacturer's Warranty

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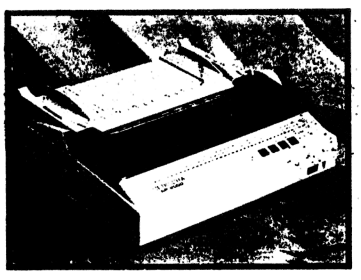


PostMaster

Computer News 80

PostMaster by David P. Miller is a program that lets you create Posters, Letterheads and Mailing Labels with icons, borders, and many different character fonts using your dot matrix printer. The program runs on TRS-80 Model 4/4P/4D, with 64K or 128K of memory that has a MicroLabs or Radio Shack high resolution board installed.

This program has received the highest praise from reviewers of any program ever written for the Model 4. It allows you to use thousands of icons, borders, and fonts that are available from the File Cabinet Icon Library, it also allows you to add your own icons, borders and fonts.

Printers supported: Radio Shack DMP-130, -130A, -131, -132, -133, -430, -2100P, also any Radio Shack DMP printer with a 3-digit number with "3" as the second digit. All Epson and IBM printers. All other dot matrix printers that are Epson and IBM emulation printers. Seikosha SP-2000, -2000Plus, -2400. Okidata Microline 182 and 192. Panasonic KX-P1091, -1092, -1124, nonsuffixed. Star 10X, -15X, -NP, -NX, LC-10. C-ITOH 1510, 8510, C-130. (Note - Dot Matrix printers providing 300-dpi or 180-dpi may not work with PostMaster and no guarantees can be made concerning them.

Printers that are not supported are: Radio Shack DMP-110, -120, -400, -500, -2100. Panasonic suffixed printers 1124i, 1124e, etc. Okidata 82, 92, and Daisy wheel printers.

Order from Computer News 80.....$40.....add S&H (Z)

IDE HARD DRIVES

by StanTech
div. of Computer News 80

Interface Hardware Circuitry by
Tim Worcester

Software by
David P. Miller

Now you can have the latest in hard drive technology with your Model 4/4D/4P.

Complete with 4 foot hard drive cable, power cord and power supply in an external enclosure, and complete operating software.

Each Drive is custom built per order using Seagate Hard Drives - please allow 4 weeks for delivery.

42.8 Meg Byte $ 350.00
for Real Time Clock
installed add $35.

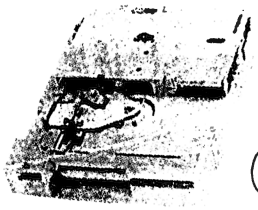
85 to 125 Meg. Drives are available but have some restrictions on the number of floppy drives and HD partitions that can be used, due to the nature of TRSDOS/LS-DOS.

85 Meg Byte $ 400.00
125 Meg Byte $ 430.00

Add $ 6.00 S&H

CHINON 5.25" Floppy Disk Drive

Low Power Consumption Plus High Performance



CUSTOM IC design in the read/write and control circuits gives maximum performance and low power consumption. A pop-up mechanism protects against mischucking upon disk insertion, allowing disks to be loaded/unloaded with ease. Chinon 5.25" floppy disk drives provide high speed access (3 ms)

DOUBLE SIDED HALF HEIGHT DRIVES
Install in any Model 3/4/4P/4D

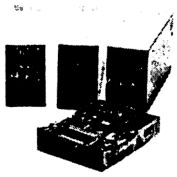
CHINON 3.5" Micro Floppy

High Storage Capacity

Internal Half Height 5-1/4" 720K & 1.2 meg $ 89.95 (Z)
*This drive can not be used in a Model 4 Computer.
Internal Half Height 3-1/2" 720 & 1.44 meg $ 79.95 (Z)
*This drive can be used in a Model 4 Computer.
Internal Half Height 5-1/4" 360K $ 67.00 (Z)
*This drive can be used in a Model 4 Computer.

Cables to connect internal drives $ 10.00
Half Height filler plates $ 4.00
*No S&H for cables and filler plates when ordered with drives.

• One Year Manufacturer's Warranty Need more information? We welcome your calls.



EXTERNAL DISK DRIVES

from

Computer News 80

These external disk drives come in a metal case with power supply, power cord, and 4 ft. drive cable which plugs into the external disk drive connector on your computer. External disk drives are shipped complete via UPS ready for you to use, just plug them in and run. Plus you get our full support and two year warranty.

Add convenience and 720K storage space with 3-1/2 disk drives to your system. Complete with all cables ready to go at one low price.
FULL TWO YEAR WARRANTY
On all parts and labor.

ALL DISK DRIVES ARE HALF HEIGHT DOUBLE-SIDED DRIVES

One disk drive unit.....$ 143.00
with one 5-1/4 360K
or 3-1/2 720K unit.

Two disk drive unit.....$ 193.00
with two 5-1/4 360K drives
or two 3-1/2 720K drives
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Add $ 6.00 Shipping and Handling in the US only, all others contact us for shipping costs.
CHECK OR MONEY ORDER, NO CREDIT CARDS

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• Contemporary design. • Includes 3 dividers. • Built in handle with mar resistant rubber feet. • Putty base with clear lid.

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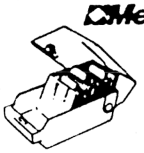


3-1/2" Holds 40 Disks ..... $ 5.90
5-1/4" Holds 50 Disks ..... $ 6.75

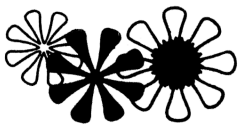
Add (T) for S&H

CNPC has the lowest price for quality

Scripsit Pro Word Processing

The original -- brand-new -- never used. This is the ultimate in word processing programs for the Model 4/4P/4D. And it is the program used to construct CN80 and CNPC. (128K memory required.)

$80.00 + $4 S&H



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Double Sided Double Density
Premium Quality
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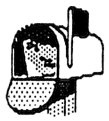

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FOR SALE: Model 4P modem, memory chips, Quikpro+, CBASIC, Business Programs for TRS-80 by Charles Sternberg, Cat #62-2079; TRS-80 Model III, Cat #26-2109; Series-I Editor Assembler Model I/III, Cat #26-2011; Advanced Statistical Analysis, Model I/III, Cat #26-1705; Assembly Language Tutor, Cat #26-2017, Make offer. Call 205-926-7380, Durward Boyles, Box 274, Brent, AL 35034.

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HOW to COPYRIGHT YOUR SOFTWARE
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Mod 4 Nongate Array Motherboards, 64k memory $49.95
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Floppy disk controller board for Mod 3 or Nongate array Mod 4 $39.95
Model 4P Internal 300 Baud Modem (Used) $30

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and printed manual for 2 or 3 button mice
for use with your Model 4
Write your own mouse programs in Basic
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M T K

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Take over your keyboard, arrow keys
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CN80
Three Button Mouse

and adapter for RS-232 connection.
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.....
Extender Cable for Model 4 with
the RS-232 connector out the bottom.
$ 8.00 plus $ 2.00 S&H
.....
Use an AB switch to connect both Mouse and Modem

CN80 COMBINATION MOUSE PACKAGE

Includes Three Button Mouse
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(4s with connector out the bottom require an additional cable)
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For Model 4 with RS-232 out the back $ 49.95
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Computer News 80 120ns and 150ns Chips

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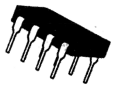

64K 120ns 128 refresh cycl. chips $ 2.75 ea.

16 Chips are required for use with Anitek Speed Up Kits.
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